CHAPTER 15

HELICOPTER EMERGENCY EGRESS DEVICE (HEED), SRU-36/P

Section 15-1. Description

15-1. GENERAL.

15-2. The SRU-36/P Helicopter Emergency Egress Device (HEED) (figure 15-1) is a compact, lightweight breathing assembly intended for emergency use of helicopter and E-2/C-2 aircrew personnel in the event of crash landing in water (ditching). The SRU-36/P provides emergency breathing air, upon demand, to aid in safe egress from submerged aircraft. The device provides 2-4 minutes of breathing air at a water depth of 20 feet and temperature of 55°F.

15-3. The Naval Inventory Control Point, Philadelphia stocks the SRU-36/P (NIIN 01-240-8316) under P/N 1586AS101-11 (CAGE 30003). The SRU-36/P is manufactured by Sabre Industries (CAGE 27045), P/N 410361, and Submersible Systems, Inc (SSI) (CAGE 49537), P/N EBS/HMC-3.

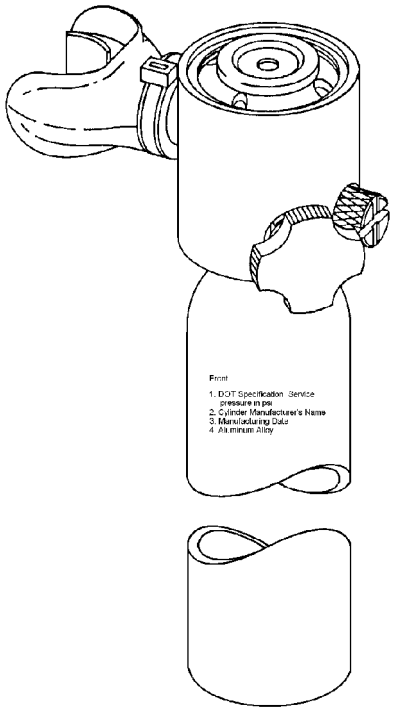

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Figure 15-1 SRU-36/P Helicopter Emergency Egress Device (HEED)

15-4. The device is carried in the pistol pocket of the SV-2 survival vest (figure 15-2) as modified by ACC 493, Amendment 1. For mobile aircrewmembers it may be carried in a holster fabricated in accordance with ACC 589 (Refer to Chapter 9).

15-5. This manual does not apply to CNO approved Water Survival Sites. Training assets shall be maintained and inspected as outlined in CNO approved HEED SOP manual by approved water survival personnel.

15-6. CONFIGURATION.

15-7. The SRU-36/P comes in one size only. It is a compact, self-contained breathing device composed of two major components; a high pressure aluminum air cylinder and a demand type regulator with attached mouthpiece.

15-8. AIR CYLINDER. The aluminum air cylinder has a capacity of 1.8 cubic feet of air at a rated pressure of 1800 psi. The open neck of the cylinder has internal threads for mounting the regulator. Hydrostatic testing of the cylinder is not required after assembly by the manufacturer. Over pressurization or internal corrosion renders the cylinder unserviceable. Specific information for the cylinder is printed on the external side of the cylinder. The air cylinder can not be ordered separately; it comes as a component of the complete SRU-36/P HEED assembly. The U.S. Department of Transportation (DOT) has rated the air cylinders DOT 3E (E7737-1800). The DOT requires that any cylinder exposed to temperatures in excess of 350°F be condemned.

15-9. REGULATOR ASSEMBLY. The regulator, which has a metallic inner main body encased in a plastic housing, is a simple demand-type regulator installed directly on the air cylinder. There is a demand chamber within the plastic housing between the inner main body and diaphragm. The mouthpiece is connected to an outlet duct in the plastic housing at the side of the demand chamber. The base of the regulator has a threaded stem for regulator-to-cylinder installation. Refer to figure 15-3 for a detailed breakdown of components and parts of the regulator.

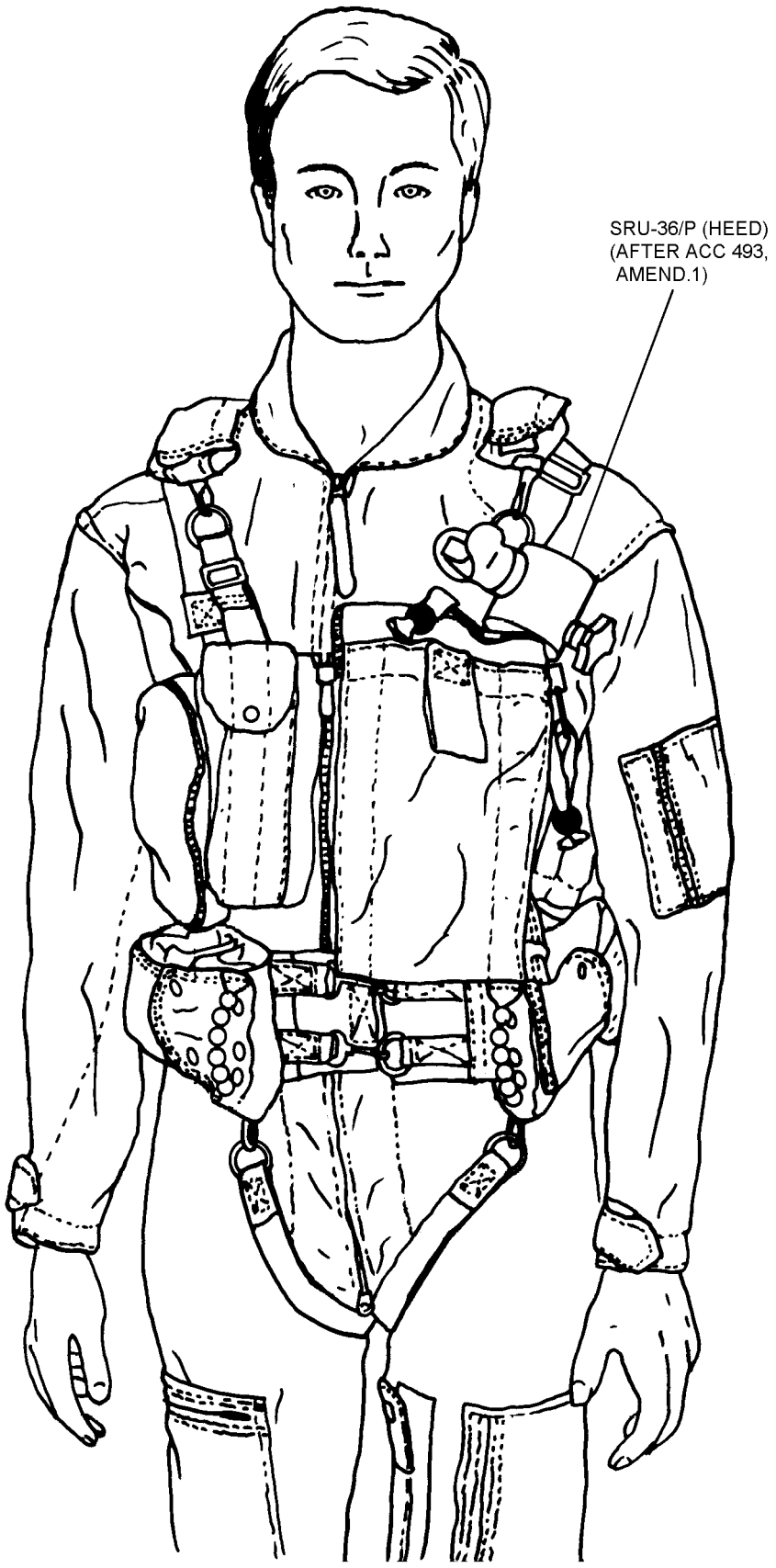

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Figure 15-2. SV-2 Life Vest with SRU-36/P (HEED)

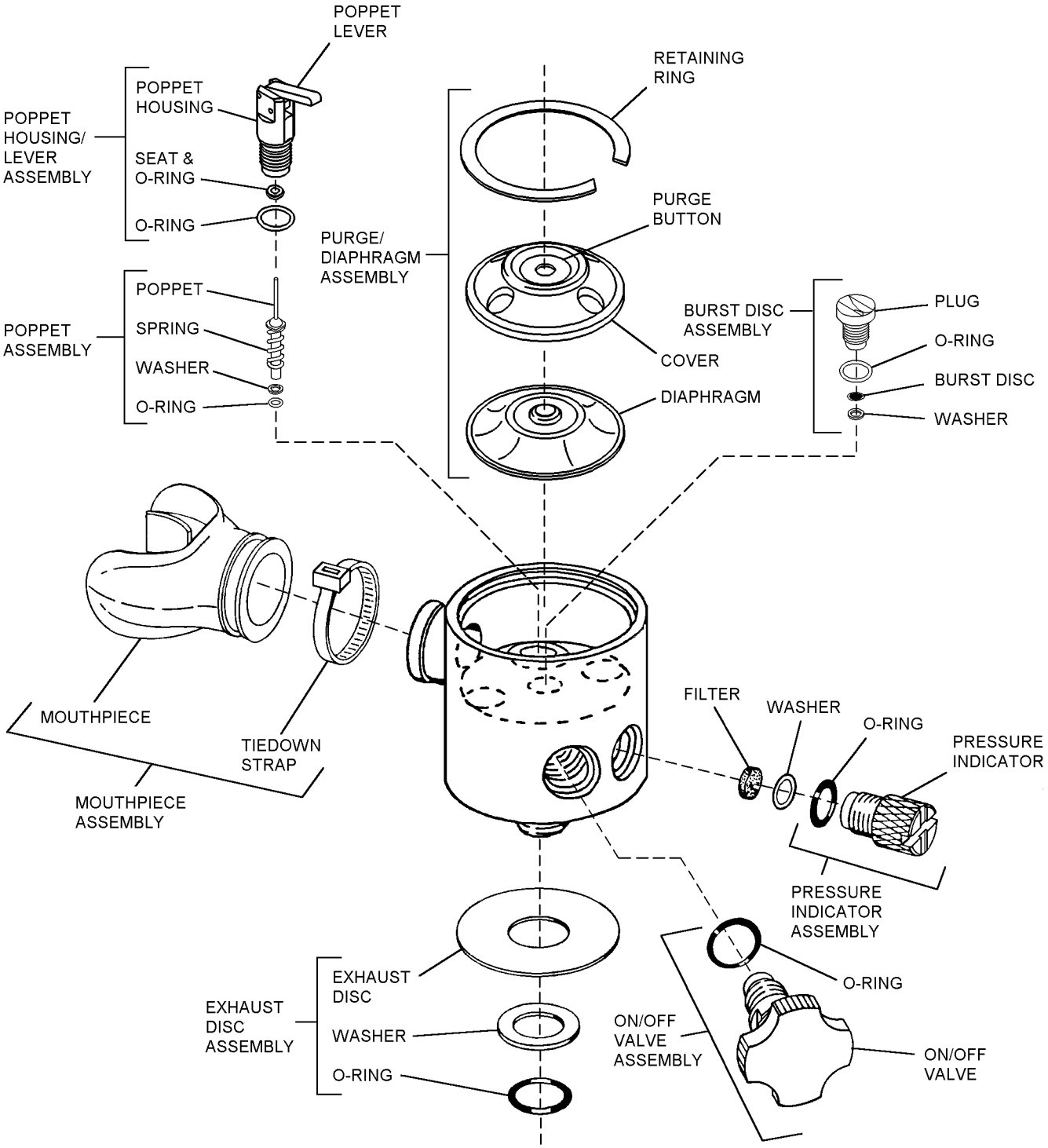


Figure 15-3. SRU-36/P Regulator Assembly

NOTE

In the following descriptions and in certain maintenance procedures throughout this manual, components of the regulator assembly have been grouped into several assemblies. These assemblies have been created by combining components into functional groups. This has been done for the purpose of simplifying their description and replacement procedures only. These component groupings can not be procured as assemblies. Refer to the Illustrated Parts Breakdown for ordering information.

CAUTION

Over tightening the valve during closing can damage the soft seating surfaces and require replacement of the regulator.

15-10. ON/OFF Valve Assembly. The ON/OFF valve assembly is installed in a threaded port in the main body. Turning the faucet-type valve counterclockwise unseats (opens) the valve and turning it clockwise seats (closes) the valve within its housing.

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

15-11. Pressure Indicator Assembly. The pressure indicator assembly is installed in a threaded port in the main body next to the ON/OFF valve. The pressure indicator assembly is a pin-protrusion type which indicates pressure by the amount of pin extension within the slotted end of the housing. The pressure indicator port also serves as the cylinder fill-port when the pressure indicator is removed. A filter and nylon washer are press fit into the port.

NOTE

Earlier HEED models have red pressure indicator assemblies with a green notch to indicate when pressure in the cylinder is at least 1500 psi. Later versions have a green pressure indicator with a red notch. If the indicator pin is below the 1500 psi line (red or green notch), the air cylinder must be topped-off or recharged before flight.

CAUTION

Only slight downward pressure on the purge button (movement of the poppet lever by 1/32 to 3/32 inch) is needed to activate air flow (figure 15-4). The downward deflection of the purge button should be approximately 1/8 inch. Excessive force may distort or dislodge the purge button or distort the poppet lever causing air to escape continuously after releasing button.

15-12. Purge/Diaphragm Assembly. The purge/diaphragm assembly consists of a flexible silicone diaphragm with a metallic disc affixed to its central underside, a plastic diaphragm cover with attached purge button, and a metal retaining ring. The silicone diaphragm seats on a ridge within the top of the plastic housing. The purge button is mounted on top of the diaphragm cover which is held in place by the retaining ring. The purge/diaphragm assembly forms the top of the regulator.

15-13. Exhaust Disc Assembly. The exhaust disc assembly consists of a flat, flexible rubber disc, a flat metal washer, and an O-ring. The rubber disc fits over the regulator stem at the base of the threads and seats against the exhaust ports at the base of the regulator. The diameter of the hole in the center of the disc is slightly larger than the center holes of the washer and O-ring. This is to allow the disc to fit over the stem shoulder of the regulator. The flat washer and O-ring secure the disc in place when the stem is screwed into the HEED air cylinder. The O-ring also provides regulator-to-cylinder seal.

15-14. Mouthpiece Assembly. The mouthpiece assembly consists of a mouthpiece and plastic tiedown strap. The molded silicone mouthpiece includes bite fixtures to aid in user retention during operational use of the SRU-36/P. The mouthpiece is installed on the housing outlet duct and secured with a plastic tiedown strap.

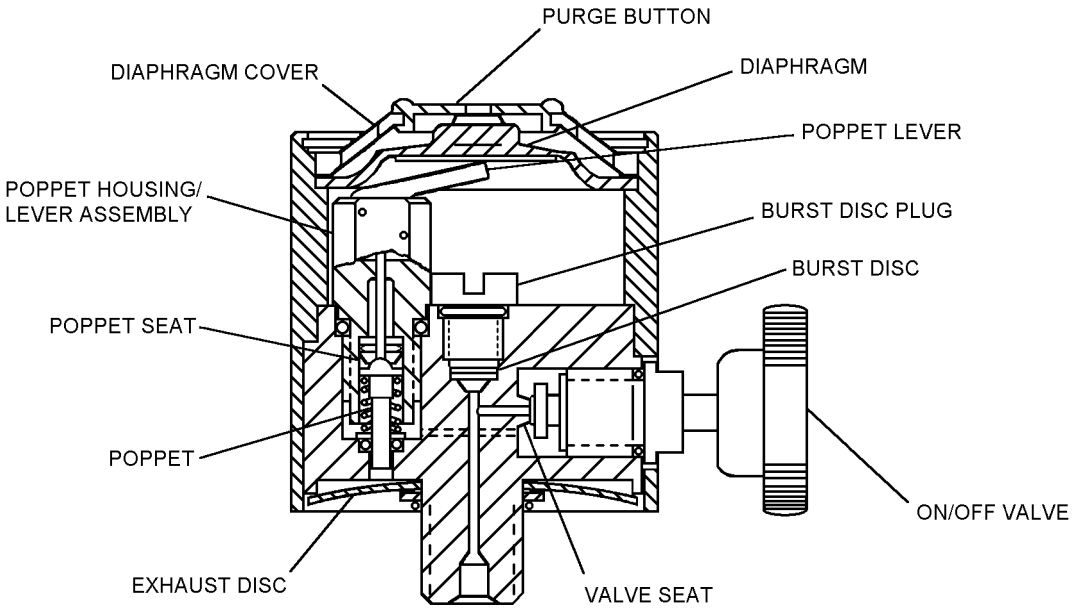


Figure 15-4. Regulator Functional Diagram

15-15. Poppet Assembly. The poppet assembly consists of a needle-shaped poppet, a spring, a poppet seat, and an O-ring. The assembly functions as a valve which controls the passage of air from the air cylinder to the regulator. The poppet assembly is actuated when pressure is applied to the poppet lever of the poppet housing/lever assembly.

15-16. Poppet Housing and Lever Assembly. The poppet housing and lever assembly is located in the regulator assembly. The poppet lever is actuated by applying downward pressure on the purge button at the top of the regulator assembly. The resulting air flow from the air cylinder enables the user to purge water from the regulator assembly and mouthpiece.

15-17. Burst Disc Assembly. The burst disc assembly is comprised of a burst disc plug, a burst disc, and nylon washer. Its purpose is to serve as a pressure relief valve should pressure in the air cylinder exceed 2600 psi.

15-18. APPLICATION.

15-19. The SRU-36/P HEED is worn by all helicopter and E-2/C-2 crewmembers, and others as approved by CNO, during all over-water flights.

15-20. FUNCTION.

15-21. Operational and functional characteristics of the SRU-36/P are as follows:

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

1. The SRU-36/P is activated by turning the ON/OFF valve fully counterclockwise to the ON position. When the valve is on, the position of the plastic pin in the pressure indicator will indicate the amount of pressure in the air cylinder (figure 15-5).

NOTE

For flight operations the HEED ON/OFF valve shall be turned on when preflight inspection is performed and shall remain on until postflight inspection is performed.

a. If the pressure indicator pin is flush with or above the top face of the indicator, it indicates that there is an 1800 psi full charge in the cylinder.

b. If the pin is flush with or above the notch, there is an operational charge of at least 1500 psi in the cylinder. Cylinder air pressures of 1500 to 1800 psi are the allowable limits for operational use of the HEED.

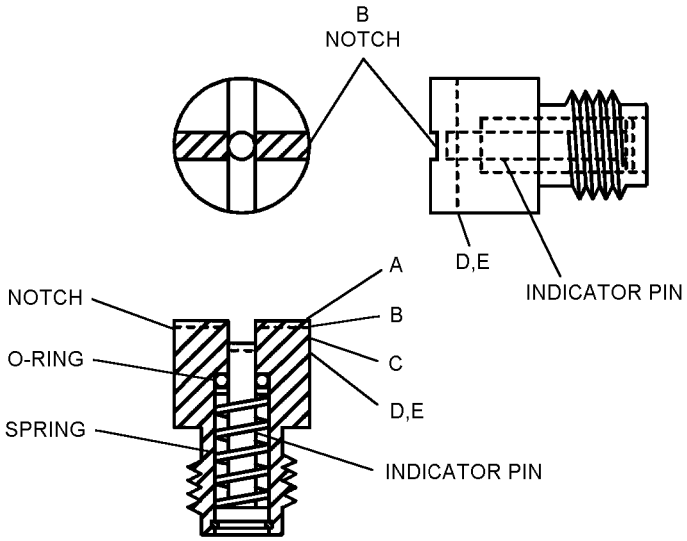
c. When the pin drops below the notch, but movement of the pin is obvious, a pressure below 1500 psi but above 900 psi is indicated and the cylinder must be topped-off (paragraph 15-55).

d. If no movement of the pin is detected, but an audible hiss is heard when the purge button is depressed, a pressure below 900 psi is indicated and the cylinder must be refilled (paragraph 15-58).

NOTE

If the cylinder is empty (no audible hiss of venting air when purge button is depressed) the unit shall be purged and inspected.

2. Upon inhalation, a negative pressure is created within the demand chamber which pulls the diaphragm down. The diaphragm, in turn, depresses the poppet lever on the poppet housing assembly forcing the poppet valve down off the poppet seat into the open position. This permits cylinder air to flow through the regulator assembly to the mouthpiece until inhalation ceases. When inhalation ceases, the negative pressure in the demand chamber is relieved and the diaphragm returns to its static position. Since there is no pressure from the diaphragm, the lever also returns to its static position, the poppet valve spring forces the poppet valve closed, and air flow from the cylinder ceases.



INDICATED AIR CYLINDER PRESSURE WITH ON/OFF VALVE IN ON (OPEN) POSITION:

A. INDICATOR PIN IS LEVEL WITH OR ABOVE TOP SURFACE = 1800 PSI.
B. INDICATOR PIN LEVEL WITH SHALLOW INDENTED SURFACE OF NOTCH = 1500 PSI (MINIMUM LIMIT PERMITTED FOR FLIGHT).
C. INDICATOR PIN IS BELOW NOTCH AND PIN MOVEMENT IS OBVIOUS = 1500 - 900 PSI (CYLINDER MUST BE TOPPED OFF).
D. INDICATOR PIN IS BELOW NOTCH AND THERE IS NO MOVEMENT OF PIN AND AN AUDIBLE HISS OF VENTING AIR IS HEARD WHEN PURGE BUTTON IS DEPRESSED = CYLINDER IS NOT EMPTY, BUT CONTAINS LESS THAN 900 PSI (CYLINDER MUST BE REFILLED).
E. INDICATOR PIN IS BELOW NOTCH AND THERE IS NO MOVEMENT OF PIN AND NO SOUND OF VENTING AIR IS HEARD WHEN PURGE BUTTON IS DEPRESSED = CYLINDER IS EMPTY (CYLINDER MUST BE PURGED IN ACCORDANCE WITH PARAGRAPH 15-61).

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Figure 15-5. Pressure Indicator Functional Diagram

3. Exhaled air flows through the mouthpiece into the demand chamber and out the main body exhaust ports in the bottom of the regulator. The internal pressure of the exhaled air forces the flexible rubber exhaust disc away from the exhaust ports allowing exhaled air to vent overboard. When exhaled air pressure ceases, the flexible exhaust disc seats to prevent water entry.

4. The SRU-36/P can be purged manually by depressing the purge button when ON/OFF valve is on. Depressing the purge button depresses the diaphragm and the poppet assembly thereby releasing air pressure from the cylinder. Air will continue to flow from the cylinder until the purge button is released or the air supply is exhausted.

5. Water will collect in the mouthpiece and demand chamber if the mouthpiece is not in place in aircrewman's mouth prior to submerging the HEED. Small amounts of water may collect in the same area during underwater use. Accumulated water can be purged from the mouthpiece and regulator either by depressing the purge button with the mouthpiece in the mouth, or by forcefully blowing (exhaling) into the mouthpiece.

6. The SRU-36/P will continue to function until air pressure in the cylinder is depleted.

7. The SRU-36/P can be topped off by using a breathing air cylinder (BAC), SCUBA tank, or compressor. An internal burst disc (safety blowout disc) is installed in the regulator to prevent over-pressurization of the HEED air cylinder. The disc is designed to rupture between 2600 and 3000 psi. If, when tested under pressure, the disc does burst, forward HEED to Intermediate Maintenance for replacement.

15-22. REFERENCE NUMBER, ITEMS, AND SUPPLY DATA.

15-23. Section 15-4, Illustrated Parts Breakdown, contains information on the SRU-36/P assembly. It contains figure and index numbers, reference or part numbers, description, quantity per assembly and Source, Maintenance, and Recoverability (SM&R) codes for all replaceable components of the HEED.

Section 15-2. Modifications

15-24. GENERAL.

15-25. There are no current directives affecting the SRU-36/P HEED (table 15-1).

15-26. MODIFICATION OF PURGE BUTTON.

15-27. Some HEED units have experienced separation of the rubber purge button. Proper adjustment of the poppet lever, as discussed in paragraph 15-100, will help prevent separation of the purge button and resulting jamming of the button into the unit to depress the diaphragm and poppet lever and activate the poppet assembly. The following modification, which shall be performed at Intermediate Maintenance, will further prevent both jamming and foreign object damage (FOD). To modify the Purge Button, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Adhesive, Polychloroprene, Class 3	MIL-A-5540
As Required	Button, Purge	P/N 411058 (CAGE 27045) or P/N 05XM (CAGE 49537)
1	Brush	A-A-289
As Required	Cord, Nylon, Type VI	VT-295E NIIN 00-515-2417
1	Bag, Plastic	MIL-B-117
As Required	Soap, Mild	P-S-800

Table 15-1. SRU-36/P HEED Directives

Description of Modification	Application	Modification Code
None	—	—

1. Inspect regulator for deterioration of adhesive securing button to cover by carefully inserting thumbnail between button and cover. If button separates from cover or if there is evidence of adhesive deterioration, the modification shall be performed. Otherwise, proceed to step 6.

2. Remove purge button, cover and diaphragm from regulator by carefully removing retaining ring per paragraph 15-95, step 4. Store removed components in clean safe place and retain for reuse.

3. Clean mating grooves of diaphragm cover and purge button with water or mild soap solution and rinse. If modification was previously performed and adhesive has deteriorated, replace diaphragm, cover, and purge button. If modification has not been performed on replacement components, proceed to step 4.

4. Apply thin coat of adhesive to mating surfaces of purge button and diaphragm cover. Allow to dry 10 minutes. Apply second coat to both surfaces.

5. When adhesive becomes tacky, reinstall purge button on diaphragm cover. Wipe off excess adhesive and allow to dry for four hours.

6. Cut two 12-inch lengths of Type VI nylon cord.

CAUTION

Do not sear ends of Type VI nylon cord used in tackings. Seared nylon could have sharp edges which could tear diaphragm.

Over tightening knots will damage purge button.

7. Route one length of Type VI nylon cord (single) through hole in rubber purge button and back through one of the four holes in diaphragm cover. Repeat to make a tacking that is two turns single, tied off with a surgeons, square and binder knot. Repeat this procedure with second length of Type VI nylon cord through hole in diaphragm cover directly opposite installation of first cord.

8. Adjust knots to allow enough movement in purge button to contact diaphragm and actuate poppet lever in accordance with paragraph 15-101.

NOTE

Adjust tackings so knots will be between diaphragm cover and diaphragm after reassembly.

9. Reinstall diaphragm and diaphragm cover with purge button installed. Secure with retaining ring (figure 15-3).

NOTE

Replacement of worn or broken Type VI cord safety tackings shall be accomplished at Organizational Level without disassembly of regulator. If disassembly is required to perform the task, forward HEED to Intermediate level accompanied by appropriate forms in accordance with OPNAVINST 4790.2 Series.

Section 15-3. Maintenance

15-28. GENERAL.

15-29. DEFINITIONS.

15-30. Purging. Purging has two meanings as follows:

1. Act of depressing purge button with finger. When regulator is pressurized, purging results in release of pressurized gas and an audible hiss.

2. Process of filling an empty HEED in accordance with paragraph 15-62.

15-31. Topping-off. Process of recharging HEED when pressure indicator shows movement when ON/OFF valve is on.

15-32. Filling. Process of recharging HEED when pressure indicator shows no movement when ON/OFF valve is on (paragraph 15-59).

15-33. PROCEDURES. Maintenance of the SRU-36/P shall consist of inspection, topping-off/filling the air cylinder, cleaning, repairing minor regulator cracks, and replacing failed components.

1. All maintenance involving removal or replacement of internal components shall be performed at intermediate level maintenance.

2. Top-off, refill, 90-Day Inspection, cylinder purge, replacement of mouthpiece and pressure indicator assemblies may be performed at Organizational Level.

NOTE

Cylinder purging may be performed at O-Level if air supply is depleted as the result of use or repair procedures and leakage and/or corrosion is not suspected.

If water or corrosion in cylinder is suspected or if the cause of air depletion cannot be determined at O-Level, HEED shall be forwarded to I-Level for further investigation and corrective maintenance.

3. All maintenance shall be performed by an Aircrew Survival Equipmentman (PR) or a designated aircrewmember trained and found qualified in top-off, refill, and inspection procedures by the Aviator's Equipment Branch. An exception is made for the Naval Aviation Water Survival Training Program (NAWSTP). Those activities use the HEED for training on a continual basis. Their high level of expertise with diving equipment qualifies such units to perform all necessary maintenance prescribed for the SRU-36/P HEED. CNO approved Naval Aviation Water Survival Training Sites shall use the maintenance procedures and inspection criteria as outlined in CNO approved HEED SOP manual.

NOTE

All maintenance involving disassembly, assembly, and cleaning of SRU-36/P HEED shall be performed in a clean, dust-free environment.

15-34. INSPECTION.

15-35. All inspections of SRU-36/P HEED, except Preflight and Postflight Inspections shall be recorded on appropriate form in accordance with OPNAVINST 4790.2 Series.

15-36. PLACE-IN-SERVICE INSPECTION. Prior to being placed into operational service the SRU-36/P shall be given a Place-In-Service Inspection. The inspection shall be performed at Intermediate Maintenance as follows:

1. Inspect the SRU-36/P for external damage, dents, cracks, corrosion, and cylinder markings (figure 15-6).

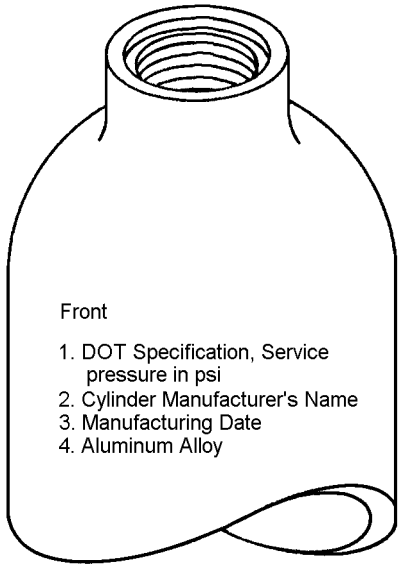

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Figure 15-6. Cylinder Markings

2. If identification labels show signs of becoming separated from the unit or are no longer legible, the HEED serial number may be engraved on the air cylinder. The number shall be engraved only on the flat area of the cylinder bottom or the unfinished shoulder/neck area of the cylinder using an electric engraving pencil.

NOTE

If applicable, engrave an X at beginning of serial number to indicate that the number is no longer valid.

3. All engraved data shall be recorded on appropriate form in accordance with OPNAVINST 4790.2 Series.

NOTE

Labels shall remain the primary tracking method.

CAUTION

Install regulator on cylinder hand-tight only and install pressure indicator in regulator finger-tight only. Use of any type tool to install either of these components could damage SRU-36/P.

NOTE

Immediately prior to connecting the regulator assembly to the air cylinder, the threads and internal surface of the cylinder shall be cleaned with compressed air to remove any foreign matter that may have collected during manufacturing or handling. Orient cylinder with mouth downward.

4. Inspect all components for security of attachment.

5. Inspect purge button for installation of tacking. If no tacking is present, install in accordance with paragraph 15-26. Inspect purge button/cover retaining ring to ensure proper seating. Ends of retaining ring shall lie flat to eliminate potential snag hazard. Replace bent or damaged retaining ring.

CAUTION

Do not use force when closing the ON/OFF valve. Excess force may damage soft seating surface. Close valve finger-tight only.

6. Ensure ON/OFF valve is off, finger-tight.

7. Purge SRU-36/P in accordance with paragraph 15-62 and refill in accordance with paragraph 15-59.

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

8. Turn ON/OFF valve on while observing pressure indicator. Indicator pin should move freely.

9. Check pressure indicator to ensure HEED has full air charge (1800 psi). The indicator pin should be flush with or above the top face of the pressure indicator assembly (figure 15-5). Top-off, if required, in accordance with paragraph 15-56.

10. Perform Functional Test.

CAUTION

Only slight pressure on the purge button (approximately 1/8 inch downward deflection) is needed to actuate air flow from the air cylinder. Excessive force may distort/dislodge purge button or distort poppet lever causing air to flow continuously after releasing button.

a. Depress purge button. Air should vent from the air cylinder with a continuous audible hiss. Release the purge button and the sound of vented air should stop immediately. If vented air does not stop immediately, depress purge button 3 or 4 more times. If vented air stops, proceed with functional test. If it does not stop or if no audible hiss is heard when purge button is depressed, proceed to step 13.

CAUTION

Do not use force when closing ON/OFF valve. Excess force may cause damage to soft seating surface. Close valve finger-tight only.

b. Ensure ON/OFF valve is off, finger tight. Bleed air from regulator by depressing purge button until air flow stops.

11. Perform leak test in accordance with paragraph 15-69.

12. If no leaks are evident, HEED is ready for issue (RFI).

13. If the SRU-36/P fails any portion of the Place-In-Service Inspection, prepare a Quality Deficiency Report (QDR) in accordance with OPNAVINST 4790.2 and exchange defective unit.

14. Make necessary entries on appropriate form in accordance with OPNAVINST 4790.2 Series.

15-37. PRE-FLIGHT INSPECTION. A pre-flight inspection shall be performed on the SRU-36/P (HEED) prior to each flight by the aircrewmember to whom the unit is assigned and shall consist of the following:

1. Visually inspect the unit for evidence of malfunction or external damage.

2. Inspect mouthpiece assembly for security and cleanliness.

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

3. Turn ON/OFF valve on and check to ensure cylinder has adequate air pressure. The pressure indicator pin should be flush with or above the notch indicating a charge of at least 1500 psi (minimum limit permitted for flight).

NOTE

The ON/OFF valve shall remain on until termination of the flight.

4. Manually purge the regulator by momentarily depressing the purge button. A continuous audible hiss should be heard as air from the air cylinder vents through the mouthpiece. The sound of vented air should cease immediately when purge button is released. If vented air does not stop immediately, depress purge button 3 or 4 more times. If vented air stops, proceed with inspection. If it does not stop or if no audible hiss is heard when purge button is depressed, forward HEED to I-Level maintenance for repair.

5. Check HEED-to-survival vest or HEED-to-holster retaining lanyard for security of attachment. Ensure quick disconnect capability in accordance with ACC 493 Amendment 1, or later version, has been incorporated into SV-2B.

NOTE

If any discrepancies are noted during pre-flight inspection, return HEED to Aviator's Equipment Branch.

15-38. POST-FLIGHT INSPECTION. A Post-Flight Inspection of the SRU-36/P (HEED) shall be performed after each flight by the aircrewmember to whom the unit was issued.

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

1. Check pressure indicator to ensure pin is above notch (indicating at least 1500 psi).

CAUTION

Do not use force when closing ON/OFF valve. Excess force may cause damage to soft seating surface. Close valve finger-tight only.

2. Turn ON/OFF valve off, finger-tight.

3. Bleed air from regulator by depressing purge button until air flow stops.

4. Inspect SRU-36/P for external damage.

5. Inspect mouthpiece for cleanliness and security.

6. Inspect regulator for cleanliness and signs of salt air/water contamination.

7. Return SRU-36/P to the Aviator's Equipment Branch and note any discrepancies found.

15-39. SRU-36/P 90-DAY INSPECTION. The 90-Day Inspection consists of a Visual Inspection and a Functional Check. This inspection may be performed at Organizational Level by a qualified Aircrew Survival Equipmentman (PR) or a designated aircrewmember trained and found qualified using following procedures:

1. Visual Inspection.

a. Remove SRU-36/P from survival vest and inspect all hardware for security of attachment and damage.

b. Verify cylinder markings (figure 15-6).

c. Check mouthpiece for cleanliness, cracks, discoloration, and security. Clean mouthpiece if needed in accordance with paragraph 15-68 or replace mouthpiece assembly in accordance with paragraph 15-83 as required.

d. Inspect regulator for external damage, cracks, and dents. Inspect for signs of dirt or salt contamination. Clean in accordance with paragraphs 15-67 and 15-68 as required.

e. Inspect retaining ring for damage, dents, and corrosion by placing ring on flat surface. Discard if ring does not lie flat. Replace with new retaining ring in accordance with paragraph 15-98 step 7.

2. Functional Check.

a. Turn ON/OFF valve on.

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

b. Check indicator pin on pressure indicator assembly for proper operation and/or damage. Pin should rise freely when ON/OFF valve is turned on. Check to ensure that pin is flush with or above top face of pressure indicator assembly. Top-off or refill as necessary.

c. With the ON/OFF valve turned on, gently press the purge button to ensure proper operation of regulator components. The sound of vented air should be noticeable. Release purge button. The hissing sound of vented air should immediately stop. If vented air does not stop immediately, depress purge button 3 or 4 more times. If vented air stops, proceed with inspection. If it does not stop or if no audible hiss is heard when purge button is depressed, forward HEED to I-Level maintenance for repair.

CAUTION

Do not use force when closing ON/OFF valve. Excess force may cause damage to soft seating surface. Close valve finger-tight only.

d. Turn ON/OFF valve off, finger-tight. Bleed air from regulator by depressing purge button until air flow stops.

3. Perform Leak Check during alternate 90-Day Inspections in accordance with paragraph 15-70. Verify on History Card.

4. Ensure HEED-to-survival vest or HEED-to-holster retaining lanyard is secured to both HEED and vest or holster. Stow HEED. Ensure ACC 493 Amendment 1.

5. Make necessary entries on appropriate form in accordance with OPNAVINST 4790.2 Series.

15-40. BREATHING AIR SOURCES.

15-41. Sources of breathing air for HEED consist of SCUBA air cylinders, portable breathing air cylinders (BAC), high pressure air cylinders, and air compressors. All sources of HEED breathing air shall maintain high standards for air purity.

15-42. STANDARDS FOR AIR PURITY.

WARNING

Contaminated breathing air can cause illness, unconsciousness, or death. Care should be exercised when using a compressor to fill air tanks for breathing purposes. Ensure that the compressor is not drawing air contaminated by exhaust fumes from its own or any other motor or fumes from glue or any other toxic source.

15-43. THE SCUBA AIR CYLINDER. SCUBA cylinders are available in several sizes. The volume of a cylinder, expressed in actual cubic feet or inches, is a measure of the internal volume of the cylinder. Its capacity, expressed in standard cubic feet or liters, is the amount of gas, measured at surface atmospheric conditions, the cylinder can hold when charged to its rated pressure. (Table 15-2 lists standard sizes of some approved SCUBA cylinders.)

Table 15-2. SCUBA Cylinder Data

Open Circuit Cylinder Description	Rated Working Pressure (PSIG)	Internal Volume (FT^3)	Capacity At Rated Pressure		Reserve Pressure (PSIG)	Outside Dimensions (Inches)	
			Ft^3	Liters		Diameter	Length
Steel 72	2250	0.422	62.4	1767	500	6.8	25
Aluminum 80	3000	0.392	80.0	2265	500	7.25	26
Aluminum 90	3000	0.398	81.3	2302	500	7.7	26.5

1. Cylinder valves and manifolds make up the system by which high-pressure air is passed from a cylinder to a first-stage regulator. The cylinder valve (tank valve) serves as an ON/OFF valve. As a safety feature in the event of excessive pressure, the tank valve is equipped with a high pressure blow-out plug (disc). When a double manifold is used, two blow-out plugs are installed. Commercial DOT approved steel cylinders rated at 2250 psi require a 3750 psi blow-out plug and aluminum cylinders rated at 3000 psi require plugs rated at 5000 psi. Blow-out plug ratings are stamped on the face of each plug and cylinder ratings are stamped on each cylinder.

NOTE

Do not service a cylinder with an incorrect blow-out plug installed. Always check to ensure that plug and cylinder are properly matched.

2. The cylinder valve with its neoprene O-ring is installed in a cylinder by the valve's straight, threaded male connector. The new 72 cubic-foot steel cylinders and all aluminum cylinders have 3/4-inch straight threads while older cylinders have 1/2-inch pipe threads.

15-44. SCUBA Air Cylinder Inspection and Test Requirements.

1. Open-circuit SCUBA cylinders shall be visually inspected every time water or minute particles of matter are suspected in the cylinder and at least once every twelve months.

2. Cylinders containing visible accumulations of corrosion shall be cleaned before being returned to service.

3. Commercial steel and aluminum SCUBA cylinders meeting Department of Transportation (DOT) and Navy requirements shall be visually inspected at least annually and hydrostatically tested at least every 5 years in accordance with DOT and Compressed Gas Association regulations.

4. SCUBA cylinders designed to Navy specifications (i.e. MK VI and Aluminum 90 series cylinders) shall be visually inspected annually and hydrostatically tested at least every 5 years.

WARNING

Strict compliance with all safety rules and regulations for safe handling and use of cylinders under pressure cannot be overemphasized. All persons responsible for handling, storing, and charging SCUBA cylinders shall be familiar with the general safety regulations in NAVSEA 0901-LP-230-0002, NSTM 550, governing the handling and use of compressed gas cylinders. Safety rules directly applicable to SCUBA cylinders are listed in table 15-3.

NOTE

Steel cylinders procured from commercial sources outside of normal Navy supply channels may not have any special markings. However, such cylinders must meet Department of Transportation (DOT) requirements specified in DOT 3AA, SP6498, and E6498.

Table 15-3. Safety Precautions for Charging and Handling SCUBA Cylinders.

1. Ensure cylinder has air reserve mechanism and mechanism is open (lever down).
2. Use only compressed air to fill conventional SCUBA cylinder. Do not fill with oxygen. The color code for Air is black and color code for Oxygen is green.
3. Ensure all fittings are tight according to maintenance instructions, before pressurizing any lines.
4. Avoid excessive heat when charging a cylinder. Do not exceed maximum charging rate of 400 psi per minute. Gas (i.e. air) under pressure passing through a restriction such as a valve can create heat buildup if maximum charging rate is exceeded. Heated gas expands and creates over-pressure.
5. Store charged cylinders in cool shaded area. Do not leave charged cylinders in direct sun light.
6. Handle charged cylinders with care. If dropped or damaged, a charged cylinder could rupture explosively. If tank valve is knocked loose, a cylinder could become propelled like a lethal missile. A cylinder charged to 2000 psi has enough energy to propel itself for a great distance tearing through obstructions in its path.
7. Cylinder should always be properly secured and not permitted to stand free or roll around.
8. Never attempt to perform maintenance on tank valve when cylinder is charged, except to attach SCUBA regulator, pressure gage, or replace O-ring.
9. Always use gages to measure cylinder pressure. Never have your face near dial of a gage to which pressure is being applied.
10. Do not attempt to fill any cylinder if inspection date has expired, has incorrect blow-out plug installed, or is substandard in any way. Cylinder with dents, severe rusting, bent valve, inoperable reserve mechanism, or evidence of internal contamination such as water or scales of rust, shall be considered substandard. See NAVSEA INST 10560 series.
11. Carry cylinder by grasping tank valve and body of cylinder only.
12. Maximum cylinder charging rate shall not exceed 400 psi per minute, with a 2 minute cool down before continuing refilling.

15-45. PORTABLE BREATHING AIR CYLINDER (BAC). The 3000 psi portable Breathing Air Cylinder (BAC) (figure 15-7) is designed to be hand-carried to remote locations to top-off the HEED air cylinder. For complete specifications and maintenance details pertaining to the BAC, refer to NAVAIR 19-1-266.

15-46. HIGH-PRESSURE AIR CYLINDER BANK. A high pressure air cylinder bank consists of several high pressure air cylinders connected in parallel to form a convenient and efficient HEED air supply system (figure 15-8). High-pressure air cylinders (flasks) are designed to hold air at high pressure. Any cylinder used as a breathing-air supply unit shall bear appropriate DOT or military symbols certifying the cylinder meets high-pressure requirements. The complete air supply system developed using these tanks includes necessary piping and manifolds, a high-pressure strainer, a pressure reducing valve, and a volume tank. A high-pressure gage shall be positioned ahead of the reducing valve, and a low-pressure gage shall be connected to the volume tank.

WARNING

Compressor relief valve has been adjusted to 3700 psi to satisfy SRU-40/P requirements. Do not exceed 1800 psi when charging the SRU-36/P.

15-47. AIR COMPRESSOR. Safety considerations are of primary importance when working with or around high pressure, such as that produced by an air compressor. Of equal importance is the safety of the individual who will be breathing the air in the cylinder while using it in a life-threatening situation. Ensure the breathing air with which the cylinders are being charged is of the proper purity. Shop air used for operating pneumatic tools shall not be used. Follow proper procedures. If a question exists, contact your supervisor, quality assurance personnel, or other maintenance or safety officers or petty officers.

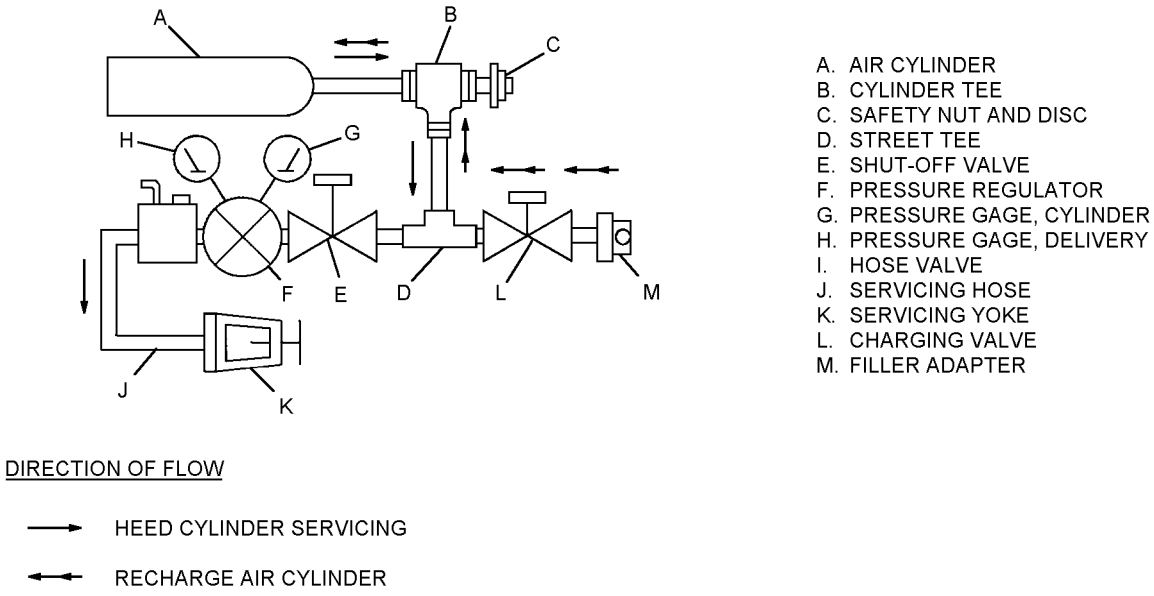

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Figure 15-7. Portable Breathing Air Cylinder (BAC)

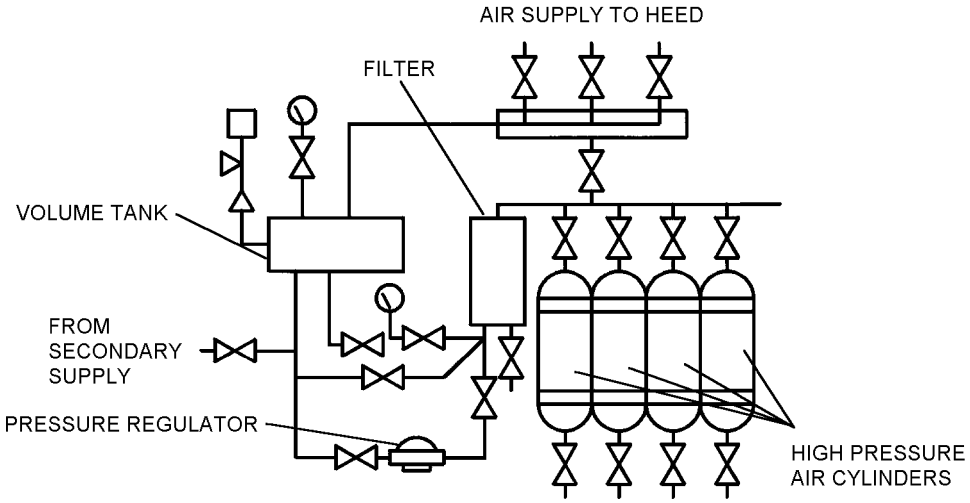

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Figure 15-8. High Pressure Cylinder Bank Air Supply System, Typical

WARNING

Do not be lulled into a false sense of security because you are working with air. Air compressed into high pressure containers becomes a highly hazardous product and must be handled with the same care and consideration given to other explosive materials.

1. Escaping high pressure air can tear through flesh or severely damage the eye.

2. High pressure air escaping from the loose delivery-end of a hose can cause the hose to flail about and cause personal injury or damage to equipment.

3. The tank valve of pressurized units, such as SCUBA or HEED air cylinders, could become disconnected or damaged and cause the cylinder to be propelled like a missile by the escaping air. This would present a severe hazard to personnel and equipment.

4. Over-pressurizing a cylinder could cause it to explode with great force or break away from its pressure source and be propelled like a missile.

5. Air compressors not permanently installed shall be firmly secured (lashed) in place. Most portable compressors are provided with lashing rings for this purpose.

15-48. Reciprocating Air Compressors. Reciprocating air compressors (figure 15-9) are of two general types; those that require oil lubrication and those that do not require oil lubrication. The majority of the air compressors used in the Navy are the oil lubricated type. The lubricant serves to prevent wear between rubbing surfaces, seat close clearances, protect against corrosion, and transfer heat and minute particles produced by wear away from points of contact. A lubricant, however, can vaporize and contaminate a breathing air supply. If not condensed or filtered out, the contaminated air will reach the user's lungs. Every effort is made to limit the amount of lubricant in breathing air, however, the only assured prevention against contamination of this type is to use approved lubricants. Any lubricant used in compressors that produce breathing air for diving shall conform to MIL-L-17331 (2190 TEP) for normal operations and MIL-H-17672 (2135 TH) for cold weather operations.

WARNING

Breathing air produced by lubricated air compressors can present a potential hazard to using personnel if compressor maintenance practices are not strictly followed.

15-49. Lubricated compressors used to supply breathing air for HEED air cylinders shall be under an intensive maintenance program designed to monitor and lim-

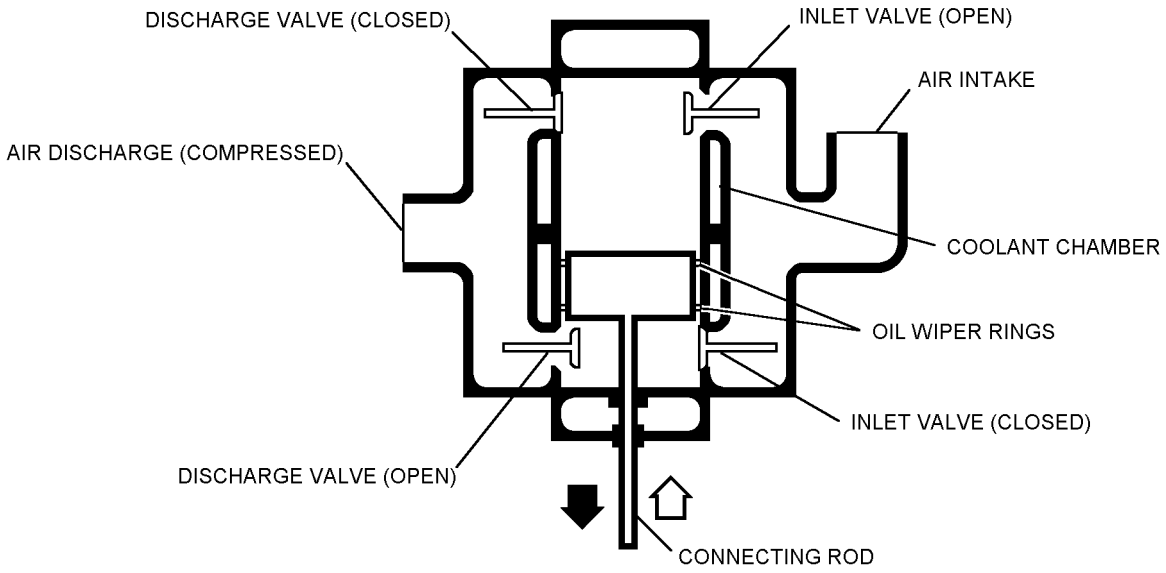

Figure 15-9. Reciprocating Air Compressor Functional Diagram

it the amount of oil mixed into the air. Operations shall be discontinued at first indication of oil in the breathing air being delivered to the HEED. Replace compressor filter in accordance with applicable compressor manual. If necessary, contact compressor manufacturer's representative and NAVCOASTSYSCEN, Panama City, FL, Code 03F.

15-50. Heat generated by air compressor operation is controlled by intercooler heat exchangers which are positioned between the stages of the compressor. Control of the compressor's temperature helps control the temperature of the air produced by the compressor. Water flowing through the heat exchanger counter to the air flow serves both to remove heat from the air and to cool the cylinder walls. Intercoolers are frequently air-cooled. During the cooling process, water vapor is condensed out of the air and collected in condensate drains. This water must be periodically drained, either manually or automatically, during operation of the compressor. Finally, as the air is discharged from the compressor, it must pass through a moisture separator and an approved filter to remove lubricant, aerosols, and particulates before it enters the Breathing Air Cylinder, SCUBA Cylinder or HEED air cylinder. Check the compressor manual and/or MRCs for filter replacement schedules.

15-51. REFILLING BREATHING AIR SOURCES.

15-52. Cascading System For Charging High Pressure Air Cylinders. SCUBA cylinders and portable Breathing Air Cylinders can best be filled by the preferred, faster, and more efficient cascading system. The normal cascade system includes a minimum of three supply flasks (designated A, B, C, etc.) manifolded together and feeding into a special SCUBA high-pressure hose assembly. The high pressure hose assembly (often referred to as, whip) consists of a SCUBA yoke fitting, a pressure gage, and a bleed valve for relieving the pressure in the lines after charging a cylinder (figure 15-10). The following procedures refer to filling SCUBA cylinders but, can be applied to the portable Breathing Air Cylinder and the HEED air cylinder using their applicable filling adapter.

1. Check existing pressure in SCUBA cylinder using a reliable pressure gage.

2. When satisfied that the cylinder is not contaminated, attach it to the yoke fitting on the whip (high pressure hose).

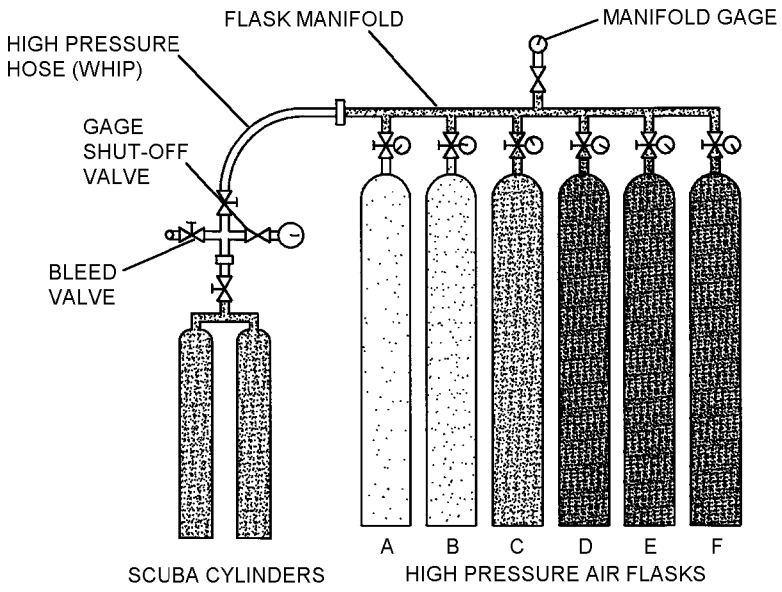

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Figure 15-10. Cascading System for Charging High Pressure Air Cylinders

3. Ensure SCUBA charging whip (high-pressure hose) has suitable safety line properly attached.

4. Ensure all fittings are tight according to maintenance instructions before pressurizing any lines.

5. Close bleed valve, (place reserve mechanism lever in open (lever down) position) and open SCUBA cylinder ON/OFF valve fully counterclockwise then back-off 1/4 to 1/2 turn. Air flow will not be materially restricted.

NOTE

The valve may tend to stick in the full open position or a person may strip the threads of a valve by mistakenly trying to force open a valve thought to be closed.

6. Begin the charging process using the flask that has the lowest pressure of the supply flasks but has greater pressure than the SCUBA cylinder.

WARNING

Do not exceed the established flow rate while charging an air cylinder. Gas (air) under pressure passing through a restriction such as a valve generates heat. Heated gas expands and could cause an over-pressure resulting in an explosion. Do not allow cylinder to get too hot to touch.

7. Slowly open the valve on supply flask. The sound of the air flowing into the SCUBA cylinder will be noticeable. Control the flow so that the pressure in the cylinder increases at a rate not to exceed 400 psig per minute. The rate of filling must be controlled to prevent overheating.

8. When pressure in the SCUBA cylinder becomes equal to that of the supply flask, close valve on the charging flask.

9. Open relief valve, disconnect SCUBA cylinder and connect it to the next higher pressure supply flask.

10. Repeat this process, closely watching the pressure gage. When the reading on the gage approaches the rated-pressure for the SCUBA cylinder, close the valve on the cylinder supply and obtain an accurate pressure reading.

11. Close the valve on the charging flask. Close the ON/OFF valve on the SCUBA cylinder. Ensure all valves in the system are properly closed. Wait for the SCUBA cylinder to cool to room temperature.

12. When the cylinder has cooled, the pressure will have dropped. Open the ON/OFF valve on the SCUBA cylinder, then the valve on the flask, to bring the pressure in the SCUBA cylinder up to its rated pressure. Then close all valves.

13. Open the bleed valve to de-pressurize the lines until all air flow stops. When air flow stops, disconnect the SCUBA cylinder from the yoke fitting and reset the reserve mechanism (lever in UP position).

NOTE

For SCUBA cylinders, it is good practice to put rubber caps over the cylinder valves. This helps to keep out dirt, and is another means for identifying that the cylinder is full. Such caps should come with the cylinder; if they do not, they may be purchased locally.

15-53. Filling SCUBA Using Air Compressor. In the absence of high pressure air systems, large volume air compressors can be used for direct charging of SCUBA cylinders. However, because of the high pressure required, few compressors can deliver air in sufficient quantity to efficiently perform the task. Small compressors should be used only if no other suitable source is available. If a suitable compressor is available, charging procedures and safety precautions will be the same as those used for cascading (paragraph 15-52); except that the compressor will be the supply source instead of a bank of cylinders. Special considerations which apply to the use of an air compressor are:

1. The air quality delivered by the compressor shall meet the established standards of purity.

2. The compressor shall be equipped with filters to remove impurities from the air.

NOTE

Filters shall be checked and cleaned on a regular basis.

3. All compressors shall be mounted in a manner to eliminate the danger of ingesting exhaust fumes from the engine, stack gas, or other contaminated air from local sources in or around the compressor or the compressor intake into the air supply.

4. Only approved lubricants, as discussed in paragraph 15-48, shall be used.

NOTE

Refer to paragraph 15-47 for additional information on the use of air compressors.

15-54. REPLENISHING SRU-36/P AIR CYLINDER.

15-55. The air supply in the SRU-36/P is replenished by topping-off or refilling the air cylinder. Topping-off or refilling can be accomplished by direct use of an air compressor charging system or charged breathing air cylinders. However, replenishing the HEED directly from an air compressor is not considered an efficient method. The preferred methods are using a portable Breathing Air Cylinder (BAC) (figure 15-7), SCUBA Air Cylinder, or a cascading system of supply flasks or tanks (figure 15-11).

NOTE

Since the portable Breathing Air Cylinder (BAC) holds only 500 cubic inches of air, it is better suited for use as a portable means of topping-off the HEED air cylinder. However, the BAC could be used for refilling the HEED in the absence of other more preferred methods.

The instructions of NAVSEA 0994-LP-001-9010 for charging procedures and safety precautions for handling high pressure air cylinders shall be used when filling or servicing the HEED unit.

1. Topping-off may be performed at O-Level maintenance when the pressure indicator indicates less than 1500 psi but more than 900 psi air remaining in the cylinder. This is indicated when the ON/OFF valve is turned on and the pressure indicator pin remains below the notch of the pressure indicator but still shows movement (figure 15-5).

2. Fill procedures may be performed at either O- or I-Level maintenance based on the following guidelines:

a. When the ON/OFF valve is turned on, there is no pressure indicator pin movement but there is an audible hissing sound of venting air when the purge button is depressed. The pressure in the cylinder is less than 900 psi but the cylinder is not empty. The air cylinder may be refilled at O-Level.

b. When the ON/OFF valve is turned on, there is no indicator pin movement and no audible hissing sound when the purge button is pressed. This indicates that the cylinder is empty. Cylinder shall be forwarded to I-Level for necessary maintenance if contamination/corrosion is suspected or if O-Level maintenance cannot determine the cause of depletion.

15-56. TOPPING-OFF HEED AIR CYLINDER.

15-57. Topping-off HEED Using Portable Breathing Air Cylinder (BAC). Top-off HEED air cylinder using BAC as follows:

Support Equipment Required

Quantity	Description	Reference Number
1	Breathing Air Cylinder Portable, 3000 psi	1695AS100-1 NIIN 01-242-9616
1	Filler Adapter/ Block Adapter	8820029-1 (CAGE 31441)
As Required	Krytox, 240 AC, Type III, Lubricant	MIL-G-27617 NIIN 00-961-8995
As Required	Leak Detection Compound	MIL-L-25567

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

1. Turn HEED ON/OFF valve on (counterclockwise) and observe movement of the pressure indicator pin to determine the amount of air required (figure 15-5).

CAUTION

Do not use force when closing ON/OFF valve. Excess force may damage soft seating surface. Close valve finger-tight only.

2. Turn ON/OFF valve off, finger-tight. Bleed pressure from HEED regulator by pressing purge button until air flow stops.

3. Remove HEED pressure indicator by unscrewing it counterclockwise.

NOTE

BAC filler adapter (P/N 8820029-1) is also known as a block adapter. In this section it will be referred to as BAC filler adapter or filler adapter.

4. Check BAC filler adapter (figure 15-11) to ensure O-rings are properly seated before connecting with HEED regulator and BAC.

WARNING

If there are two or more damaged threads on either the BAC filler adapter or pressure indicator port of regulator, the HEED could break away as pressure builds up and be propelled like a missile presenting a hazard to personnel and equipment.

5. Check condition of threads on BAC filler adapter and HEED regulator. If two or more threads are damaged on either, replace damaged item.

6. Install filler adapter in HEED regulator pressure indicator port.

7. Turn BAC pressure regulator handwheel (F, figure 15-7) and shut-off valve (E) to full counterclockwise position. Then turn hose valve (I) to full clockwise position.

8. Check BAC pressure on input pressure gage (G). The pressure should be greater than 1800 psi. If it is not, return BAC to I-Level maintenance for recharging.

9. Turn BAC pressure regulator handwheel (F) clockwise until 200 psi or less is indicated on output pressure gage (H) to purge the servicing hose (J). Turn BAC regulator handwheel (F) to OFF (counterclockwise to vent position).

10. Adjust BAC pressure regulator to desired delivery (output) pressure (1800 psi) by turning pressure regulator handwheel (F) clockwise. Delivery (output) pressure gage (H) will indicate output pressure.

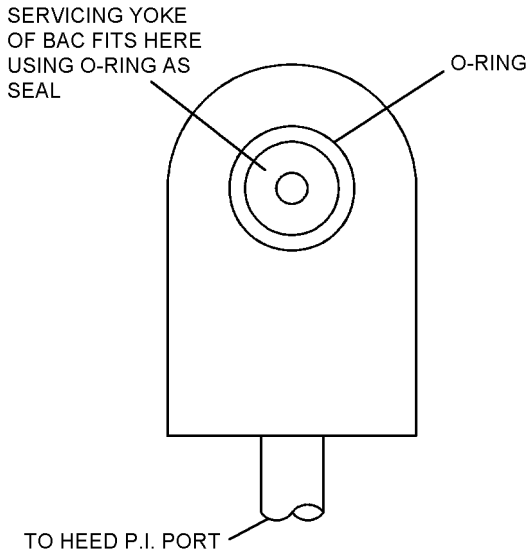

Figure 15-11. BAC Filler Adapter (P/N 8820029-1)

NOTE

If delivery (output) pressure adjustment is exceeded, turn BAC pressure regulator handwheel (F) counterclockwise to make adjustment.

11. Place HEED air cylinder in burst chamber and attach servicing yoke (K) to filler adapter installed in HEED pressure indicator port.

12. Slowly turn hose valve (I) counterclockwise to FLOW position allowing air to flow into the servicing hose (J).

13. Slowly open pressure regulator handwheel (F) clockwise (load) to approximately 500 psi on delivery pressure gage (H).

14. Slowly turn HEED ON/OFF valve on while simultaneously turning pressure regulator handwheel (F) clockwise (load) to gradually equalize pressure between output pressure of BAC and HEED. When pressures equalize audible hissing sound stops.

WARNING

Do not fill HEED air cylinder too rapidly. Gas (such as air) passing through restriction of a valve can cause heat buildup. Heated air expands and could result in explosion.

15. Alternately open and close pressure regulator handwheel (F) and gradually fill HEED cylinder approximately 300 to 400 psi at a time until cylinder is filled to 1800 psi.

CAUTION

Do not use force when closing ON/OFF valve. Excess force may damage soft seating surface. Close valve finger-tight only.

16. When HEED has received complete charge (1800 psi), turn HEED ON/OFF valve off, finger-tight.

17. Turn hose valve (I) clockwise to CLOSED position.

NOTE

Pressure trapped between HEED regulator and hose valve (I) will bleed off automatically through relief vent in hose valve.

If no other HEED cylinders are to be filled, proceed to step 18. If another cylinder is to be filled, (1) turn pressure regulator handwheel (F) counterclockwise (vent) to bleed pressure on delivery gage (H) to approximately 500 psi and (2) return to step 2 and repeat top-off procedure.

18. Close BAC shut-off valve (E) (turn clockwise), and turn pressure regulator handwheel (F) fully counterclockwise (vent). Delivery pressure gage (H) indicator should return to zero psi.

19. Turn pressure regulator handwheel (F) clockwise (load) until cylinder pressure gage (G) indicates zero psi. Then turn handwheel (F) counterclockwise (vent) to vent air trapped in pressure regulator handwheel (F).

20. Disconnect servicing yoke (K) from filler adapter (M) and remove HEED cylinder from burst chamber.

21. Disconnect filler adapter from charged HEED air cylinder and stow the hose.

22. Using rubber band, secure plastic bag around adapter and servicing yoke (K) to keep them clean.

23. Check inside pressure indicator port to ensure filter and washer are present and properly seated with washer on top of filter. If they do not appear to be properly seated, gently tap them in place using an awl, auger, dental pick or similar instrument. If they will not seat properly or if either part requires replacement, forward HEED to I-Level maintenance.

24. Inspect pressure indicator O-ring for cuts, nicks or damage and replace, if necessary.

CAUTION

Do not use excessive lubricant. Prevent lubricant from entering regulator port or open ends of pressure indicator.

25. Lightly lubricate O-ring and pressure indicator threads with lubricant.

CAUTION

Do not use tools to tighten pressure indicator. Install finger-tight only.

26. Reinstall pressure indicator in HEED regulator finger-tight only.

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

27. Turn ON/OFF valve on and check air cylinder pressure. Pressure indicator should indicate 1500-1800 psi (indicator pin should be above notch).

28. Apply leak detection compound to pressure indicator assembly around indicator port and at the indicator pin, or submerge HEED under tap water and check for leakage. If no leakage is detected, proceed to step 29. If leakage is detected around indicator port and the indicator assembly is securely installed, proceed as follows:

CAUTION

Do not use force when closing ON/OFF valve. Excess force may damage soft seating surface. Close valve finger-tight only.

a. Close ON/OFF valve, finger-tight, and bleed pressure from regulator by depressing purge button until air flow stops.

b. Remove leak detection compound from HEED and wipe clean.

c. Remove pressure indicator and repeat steps 23, 24, and 26 through 28.

d. If leakage is still detected, route HEED to I-Level for corrective maintenance.

29. Close ON/OFF valve finger-tight.

30. Bleed pressure from HEED regulator by depressing purge button until air flow stops.

31. Clean mouthpiece in accordance with paragraph 15-68. HEED is now RFI.

15-58. Topping-off HEED Using SCUBA Air Cylinder. Charging procedures and safety precautions for handling high pressure air cylinders contained in U.S. Navy Diving Manual, Naval Sea Systems Command technical manual 0994-LP-001-9010 (NSN 0927-LP-668-7148), shall be used when filling or servicing the HEED air cylinder.

Support Equipment

Quantity	Description	Reference Number
1	SCUBA Air Cylinder	NIIN 01-228-1099
1	Top-Off Adapter/ Servicing Yoke	900M1 (Note 1)
As Required	SCUBA Cylinder Protective Frame	Fabricate IAW NAVAIR Dwg No. 3057AS101

Materials Required

As Required	Krytox, 240 AC, Type III, Lubricant	MIL-G-27617 NIIN 00-961-8995
As Required	Leak Detection Compound	MIL-L-25567

Note: 1. Top-Off Adapter is available open purchase from the following source. Request Top-Off adapter for use with the 1800 psi SRU-36/P:
Submersible Systems Inc,
18072 Gothard St
Huntington Beach CA 92648
(800) 648-3483
(714) 842-6566

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

1. Turn HEED ON/OFF valve on and observe movement of pressure indicator pin to determine amount of pressure required in the HEED air cylinder.

CAUTION

Do not use force when closing HEED ON/OFF valve. Excess force may damage soft seating surface. Close ON/OFF valve finger-tight only.

2. Turn HEED ON/OFF valve off, finger-tight. Bleed pressure from HEED regulator by depressing purge button until air flow stops.

3. Remove HEED pressure indicator by unscrewing it counterclockwise and put it aside in a clean place.

WARNING

If two or more threads are damaged on either the top-off adapter/servicing yoke or pressure indicator port of regulator, HEED could break away when pressure builds up and be propelled like a missile presenting a hazard to personnel and equipment.

4. Inspect condition of threads on top-off adapter/servicing yoke (figure 15-12 or 15-13) and pressure indicator port of regulator. If two or more threads are damaged on either, discard damaged item.

5. Install top-off adapter in pressure indicator port of HEED regulator. Take care not to cross the threads and do not over-tighten.

6. Install HEED and attached top-off adapter in adapter yoke servicing assembly of the SCUBA cylinder.

7. Ensure the vent relief valve of the SCUBA feed line is closed (clockwise) finger tight.

8. Turn SCUBA ON/OFF valve ON to ensure pressure in the top-off SCUBA cylinder is greater than 1800 psi.

NOTE

If pressure is not correct, forward the SCUBA cylinder to I-Level for recharging/refilling.

9. Turn SCUBA ON/OFF valve OFF.

10. Open SCUBA vent valve, bleed pressure from feed line, and close valve.

11. Turn HEED ON/OFF valve on (counterclockwise).

WARNING

Do not allow the HEED to fill too quickly. Gas passing through restriction such as a valve could create heat buildup. Heated gas expands and could possibly cause explosion.

12. Turn SCUBA ON/OFF valve to ON position by slowly cracking valve. Allow HEED air cylinder pressure to build to about 300 to 400 psi then turn SCUBA valve OFF. Continue this cascading procedure, filling the air cylinder slowly, 300 to 400 psi at a time. Keep a close watch on the adapter indicator pin or pressure gage and turn SCUBA valve to OFF when the HEED is filled to 1800 psi.

NOTE

If adapter indicator is used, an audible hiss will be heard emanating from the pin when the HEED is at a full charge (1800 psi).

13. Turn HEED ON/OFF valve off (clockwise).

14. Open SCUBA vent valve and bleed pressure from feed line.

15. Remove top-off adapter from SCUBA cylinder. Then remove top-off adapter from HEED.

16. Ensure filter and washer inside the pressure indicator port are seated properly with washer on top of filter. If they are not seated properly, gently tap them in place using an awl, auger, dental pick, or similar instrument. If unable to seat, or either part needs replacing, forward HEED to I-Level for repair.

17. Inspect pressure indicator O-ring for cuts, nicks, or damage and replace, if necessary.

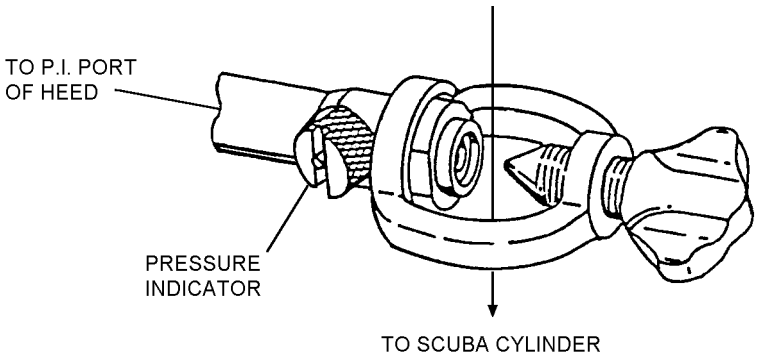

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Figure 15-12. HEED Top-Off Adapter/Servicing Yoke

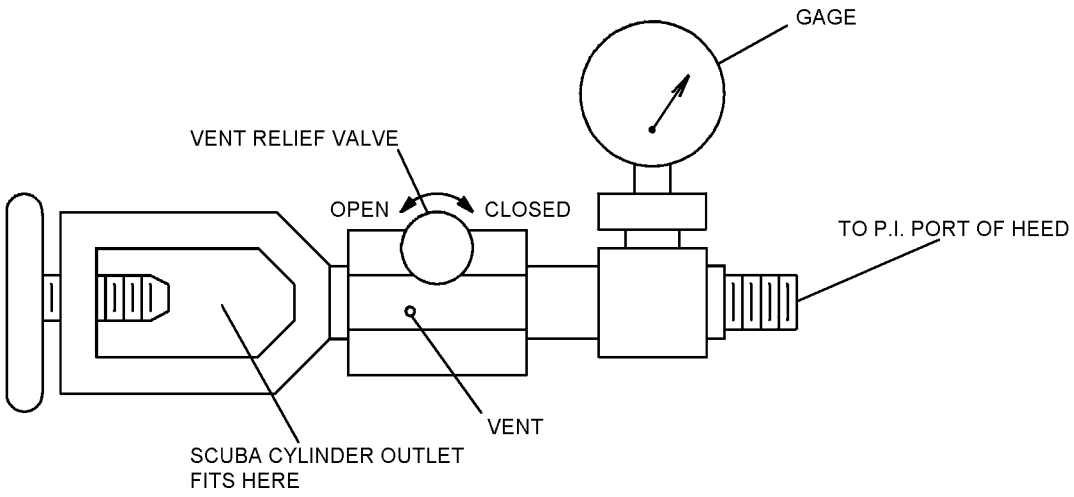

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Figure 15-13. HEED Top-Off Adapter With Pressure Gage

CAUTION

Prevent lubricant from entering regulator or open ends of pressure indicator.

18. Lightly lubricate O-ring and pressure indicator threads with lubricant.

CAUTION

Do not over-tighten pressure indicator. Install finger-tight only.

19. Reinstall pressure indicator in regulator, finger-tight only.

20. Pressure in HEED air cylinder shall indicate 1500-1800 psi (indicator pin at or between shallow indent of red/green notch and top surface of indicator assembly.

21. Apply leak detection compound to pressure indicator assembly around indicator port and at indicator pin. If leakage is detected, proceed as follows:

a. Close ON/OFF valve.

b. Press purge button to bleed pressure from regulator.

c. Clean leak detection compound from regulator and wipe dry.

d. Remove pressure indicator from regulator and inspect O-ring, filter, and nylon washer for damage and proper seating.

e. Return to step 19 and repeat all procedures. If leakage is still detected, route HEED to I-Level for corrective maintenance.

22. Before stowing, wrap top-off adapter in plastic and secure with rubber band to prevent contamination.

CAUTION

To prevent damage to soft seating surface, do not over-tighten HEED ON/OFF valve; close finger-tight only.

23. Turn HEED ON/OFF valve off.

24. Bleed pressure from HEED regulator by depressing purge button until air flow stops.

25. Clean mouthpiece in accordance with paragraph 15-68. HEED is now RFI.

15-59. FILLING HEED AIR CYLINDER. If there is no movement of pressure indicator pin when HEED ON/OFF valve is turned on but there is an audible hissing sound of venting air when the purge valve is depressed, the HEED air cylinder needs to be refilled. This may be accomplished at O-Level or I-Level by direct use of a cascading bank of supply tanks, a SCUBA cylinder, a portable Breathing Air Cylinder, or an air compressor (paragraphs 15-52, 15-60 or 15-61). If however, there is no hissing sound when the purge button is depressed, the HEED is empty. Pressure in the HEED may have been depleted through use, purging, or the result of maintenance being performed which required reduction of air pressure in the cylinder. If the reason for depletion is not known or contamination/corrosion is suspected, forward HEED to I-Level for more extensive inspection, including internal corrosion inspection.

WARNING

Do not recharge HEED to pressure exceeding 1800 psi and do not recharge the servicing cylinder to pressure exceeding the working pressure indicated on cylinder.

CAUTION

Before attempting to refill HEED, SCUBA, or BAC, refer to safety precautions in table 7-3, U.S. Navy Diving Manual, NAVSEA 0994-LP-001-9010, and applicable air compressor manual.

NOTE

Ensure all fittings and adapters are free of dirt and contaminants before assembling for filling operations.

15-60. Filling HEED Using Portable Breathing Air Cylinder or SCUBA Cylinder. Procedures for refilling HEED air cylinder using the BAC or SCUBA cylinder are the same as the procedures used for topping-off the HEED (paragraphs 15-57 and 15-58, respectively).

NOTE

Using the Breathing Air Cylinder (BAC) for refilling the HEED is not an efficient method due to the relative amount of air required to fill the HEED. However, it may be used in the absence of the other more preferred methods.

15-61. Filling HEED Using Air Compressor. Filling the HEED directly from an air compressor is not an efficient method due to the relative amount of air required by HEED. It is best to use the compressor to fill a SCUBA cylinder, a Breathing Air Cylinder (BAC), or a bank of volume or supply tanks which are then used to refill the HEED. However, should the need arise and a suitable compressor is available, HEED may be filled using an air compressor as follows:

WARNING

Compressor relief valve has been adjusted to 3700 psi to satisfy SRU-40/P requirements. Do not exceed 1800 psi when charging the SRU-36/P.

Support Equipment

Quantity	Description	Reference Number
1	Air Compressor (NAVSEA INST 10560.2 compliance required)	PAC 4E-1
1	Refill Adapter	1586AS103-1

Materials Required

Quantity	Description	Reference Number
As Required	Krytox, 240 AC, Type III, Lubricant	MIL-G-27617, NIIN 00-961-8995
As Required	Leak Detection Compound	MIL-L-25567
As Required	Cloth, Lint-Free	—

CAUTION

Do not use tools of any type or gloves to enhance grip when installing HEED regulator on air cylinder. Install hand-tight only. Secure HEED cylinder.

1. Ensure HEED regulator is installed on HEED air cylinder assembly hand-tight only.

2. Ensure HEED ON/OFF valve is off, (clockwise).

3. Bleed pressure from regulator by depressing purge button on HEED until air flow stops.

4. Install refill adapter (figure 15-14) on compressor fill (supply) line.

5. Turn air compressor ON.

a. Open compressor supply line SHUT-OFF valve to purge fill (supply) line and refill adapter.

b. Turn compressor OFF and close compressor supply line SHUT-OFF valve.

6. Ensure HEED ON/OFF valve is off and depress purge button to bleed regulator.

7. Remove pressure indicator from regulator port.

8. Ensure HEED pressure indicator filter and nylon washer are in place and properly seated with the washer on top of the filter.

CAUTION

Inspect threads of refill adapter and pressure indicator port. Discard either if two or more threads are found to be damaged on either the regulator or adapter.

9. Ensure O-ring is seated on refill adapter and install adapter in pressure indicator port hand-tight.

10. Start compressor.

11. Before beginning filling operation, open compressor drain valves and drain condensate from separator and purifier. Close the drain valve(s).

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

12. Slowly open HEED ON/OFF valve to full on position.

13. Charge HEED until output gage reads 1800 psi.

14. When charging is complete, turn air compressor OFF.

NOTE

If more cylinders or tanks are to be filled, compressor may be left ON.

15. Turn HEED ON/OFF valve off.

16. Turn compressor supply line SHUT-OFF valve to OFF.

17. Open compressor SHUT-OFF valve just enough to bleed off pressure from the supply line.

18. Remove HEED from refill adapter.

19. Close compressor supply line ON/OFF valve (fully clockwise) and open vent discharge knob on supply side of compressor pressure regulator.

20. Close vent discharge (bleed) valve.

21. Inspect pressure indicator O-ring to ensure that it is clean and free from damage. Clean with dry, lint-free cloth or replace if necessary.

22. Inspect filter and nylon washer in pressure indicator port for proper seating. Replace filter indicator assembly if damaged or corroded.

CAUTION

Do not use tools of any type to install pressure indicator in regulator. Install finger-tight only.

23. Lightly lubricate O-ring and pressure indicator threads with lubricant. Install pressure indicator in regulator finger-tight only.

24. Ensure HEED ON/OFF valve is off. Depress purge button and bleed pressure from HEED regulator.

25. Remove refill adapter from air compressor servicing yoke, wrap in plastic bag to prevent dirt or other contamination, and stow.

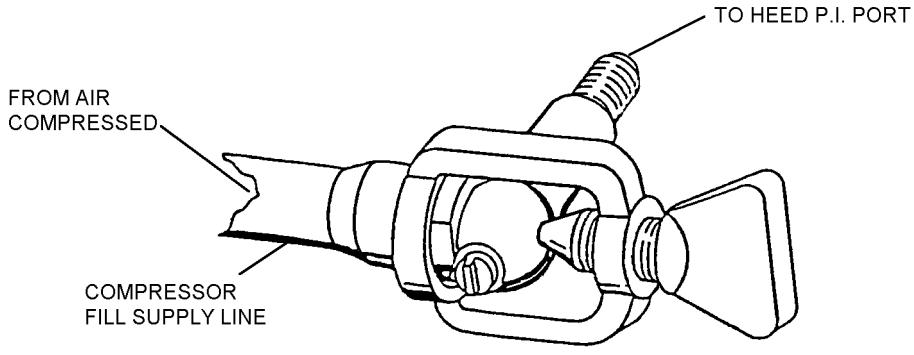

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Figure 15-14. HEED-Compressor Refill Adapter

26. Open drain valves and drain condensate from compressor separator and purifier. Close drain valve.

15-62. PURGING HEED SRU-36/P.

15-63. Cylinder purging shall be performed at O-Level if air supply is depleted as a result of use or repair procedures and leakage and/or corrosion is not suspected and any time contamination is suspected or when the SRU-36/P has remained empty for more than 2 hours. If water or corrosion in cylinder is suspected or if the cause of air depletion cannot be determined at O-Level, HEED shall be forwarded to I-Level for further investigation and corrective maintenance. When cylinder has remained empty for more than 2 hours or if contamination is suspected, the regulator must be removed and cylinder inspected for internal contamination. If corrosion is found, replace unit. The HEED shall also be purged at I-Level upon receipt from supply.

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

1. Turn SRU-36/P HEED ON/OFF valve on. Ensure cylinder pressure is completely depleted by depressing purge button until no audible hiss of venting air is evident.

2. Turn HEED ON/OFF valve off. Remove pressure indicator assembly with O-ring. Ensure filter and nylon washer are installed and properly seated in pressure indicator port with nylon washer installed on top of filter.

3. Adjust compressor output to 300 psi or if compressor has an in-line gauge, ensure that it will read at 300 psi.

4. Turn compressor ON. Open supply line shut-off valve to purge supply line and the refill adapter. Close supply line shut-off valve. Connect HEED to supply line by installing refill adapter in HEED pressure indicator port.

5. Slowly open supply line shut-off valve and slowly open HEED ON/OFF valve.

6. When compressor output gage indicates 300 psi in HEED, close supply line shut-off valve.

7. Bleed pressure from HEED by depressing purge button until audible hiss of venting air stops. Close HEED ON/OFF valve.

8. Repeat steps 5 through 7 two more times for a total of 3 times.

9. Fill the SRU-36/P air cylinder in accordance with paragraph 15-59.

15-64. CLEANING.

15-65. Cleaning the HEED includes removal of dirt, grease or oil, corrosion, and sanitizing as required. Cleaning may involve a clean rinse, use of ultrasonic cleaner, and/or blow cleaning using compressed air. If prior use is known or suspected, the HEED shall be cleaned and sanitized in accordance with paragraph 15-68. Paragraph 15-69 details the cleaning and sanitizing procedures recommended for training units. General cleaning procedures which do not involve disassembly of internal components of the regulator may be performed at organizational or intermediate levels of maintenance. Cleaning which requires disassembly of internal parts shall be performed at Intermediate Level.

NOTE

Component parts shall be replaced when dirt or corrosion prevents proper operation.

15-66. SPECIAL CONSIDERATIONS WHEN CLEANING HEED. The special considerations addressed in the following are applicable to both training and operational use of the HEED.

WARNING

Do not depress purge button while rinsing when regulator is not pressurized. Pressure is required to prevent entry of foreign particles and other contaminants which could result in corrosion and leakage.

1. Depressing the purge button opens the air passage route between the air cylinder and the demand chamber in the regulator. If the HEED is not pressurized and is being rinsed or submerged in water, the open poppet could allow the influx of water through the air passage to the cylinder. Foreign particles which may be in the water could contaminate the poppet seating surface and cause corrosion and/or leakage. If water should enter the cylinder, it shall be removed and rinsed internally with a one-to-one solution of water and white vinegar.

NOTE

In training programs where HEED is subject to use for breathing air by more than one person, it shall be cleaned and sanitized in accordance with paragraph 5-69 after each individual use.

2. Anytime the HEED is used for breathing air during training, it shall be rinsed with clean fresh water within a few hours of use. Prior to rinsing, pressurize the regulator by turning ON/OFF valve on. This allows the inside of the regulator to be rinsed without contaminating air passages or disturbing sealing surfaces. Turn ON/OFF valve off and allow HEED to dry before storage.

CAUTION

Use only materials (cleaning and disinfectant solutions, and lubricants) and procedures specifically authorized for performing maintenance on SRU-36/P HEED.

15-67. CLEANING METAL COMPONENTS. For best results clean HEED metal components using ultrasonic cleaner with one-to-one solution of water and white vinegar. If ultrasonic cleaner is not available, soak in same ratio solution of hot water and white vinegar. Clean disassembled metal components as follows:

1. After soaking, rinse with fresh water.

CAUTION

Protect poppet assembly and sealing surfaces from impact of dislodged particles which may cause damage resulting in leakage.

2. Using clean, oil-free, filtered compressed air blow-clean HEED components by directing air through all regulator ports to dislodge particles which may be lodged in air passages.

3. Blow-clean all parts and O-rings.

NOTE

Replace all O-rings whenever possible.

4. Ensure regulator body is thoroughly dry before reinstalling components and parts.

15-68. CLEANING AND DISINFECTING HEED COMPONENTS. Clean and disinfect mouthpiece, regulator and components as follows:

Materials Required

Quantity	Description	Reference Number
1	Brush, Non-Metallic	—
As Required	Gauze or Cotton Swabs	—
As Required	Benzalkonium Chloride, 4 fl oz or SANI-COM Benzalkonium wipes	MIL-B-37451 NIIN 00-149-8705 P/N SC 3205 NIIN 01-036-4464
As Required	O-ring	—

NOTE

Component parts shall be replaced when dirt or corrosion prevents proper operation.

1. Mouthpiece.

CAUTION

Do not use soap when cleaning mouthpiece.

a. Clean mouthpiece with warm, clean tap water and a small non-metallic brush.

NOTE

Disinfectant solution shall be one part benzalkonium chloride to 1000 parts water.

b. Disinfect mouthpiece using gauze or cotton swab and benzalkonium chloride solution.

c. Allow to air dry completely.

2. Regulator.

a. Remove retaining ring, purge button/cover, and diaphragm.

b. Turn ON/OFF valve on.

c. Flush regulator and diaphragm with warm, fresh tap water.

d. Drain water from demand chamber.

e. Disinfect regulator and diaphragm, as required, using gauze or cotton swab and benzalkonium chloride solution in accordance with this paragraph. Use procedures in paragraph 15-69 for HEED used in training unit.

f. Drain any excess solution from regulator.

g. Turn ON/OFF valve off.

h. Allow regulator to air dry.

i. Reinstall diaphragm, purge button/cover, and retaining ring.

j. Depress purge button until air flow stops.

3. Diaphragm. Clean and rinse with warm water.

15-69. ALTERNATE METHOD FOR CLEANING AND DISINFECTING HEED. An alternate method for cleaning and disinfecting HEED is detailed in Volume 1, U.S. Navy Diving Manual. When prepared and used properly the disinfectant used in this process will kill the viruses of Hepatitis B, Herpes Simplex, and AIDS (Acquired Immunological Deficiency Syndrome). Procedures are as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Prepodyne Scrub or equivalent (i.e. WESCO-DYNE)	NIIN 01-090-1721
1	Brush, Soft Bristle	—

WARNING

Prepodyne Scrub must be carefully diluted. Mixed in the proper ratio (1 to 213, see mixing procedures below) this solution acts as a detergent with a sudsing action and as a disinfectant. If mixed in a stronger or weaker concentration, the solution will not be an effective disinfectant.

If a larger amount of solution is mixed and maintained for stock, it should be used before it begins to lose its brown color. The loss of color indicates it no longer has enough free iodine to be an effective disinfectant and shall be discarded.

1. Carefully prepare solution in desired amount.

NOTE

Mix three fluid ounces of Prepodyne Scrub with five gallons of clean, warm, fresh water. For lesser amounts of the solution, mix at ratio of 0.6 fluid ounce to one gallon of clean, warm, fresh water.

2. Flush or rinse parts with fresh water.

3. Scrub parts briskly and thoroughly using a soft bristle brush and scrub solution.

NOTE

Be sure this step is performed thoroughly. It is a very important step in the process of eliminating viruses and bacteria from the equipment.

4. Inspect each part to ensure all foreign material and contaminants (e.g. grit, grease, or stains) have been removed. If necessary, repeat step 3.

5. After washing briskly, place parts in the solution for a contact time of 10 minutes, which is time required for disinfectant to kill the viruses of Hepatitis B, Herpes Simplex, and AIDS.

6. Remove parts and rinse them thoroughly with clean, warm fresh water and place them on a clean surface to air dry.

15-70. LEAK TESTING SRU-36/P.

15-71. The leak test shall be performed by a qualified Aircrew Survival Equipmentman (PR) or a designated aircrewmember trained and found qualified. Leak tests are required during the Place-in-Service Inspection (paragraph 15-36) at the Intermediate Level of maintenance. The Static Leak Test (paragraph 15-72) and ON/OFF Valve Inspection (paragraph 15-73) may be performed at Organizational Level during required 90-Day Inspections or as required. If leak is detected during the static test or ON/OFF Valve Inspection, HEED shall be forwarded to Intermediate Level maintenance for a more extensive leak test (paragraph 15-74).

15-72. STATIC LEAK TEST. The Static Leak Test is performed as follows:

1. Ensure SRU-36/P is fully charged (indicator pin is flush with top of pressure indicator).

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

2. Turn ON/OFF valve on, record the time, and set HEED aside for four-hour Static Leak Test.

3. At the end of four-hour period, check pressure indicator for pressure. If pin has remained flush with the top of the pressure indicator, turn ON/OFF valve off. Bleed pressure from regulator by depressing the purge button until air flow stops. If the indicator pin did not remain flush, HEED shall be forwarded to Intermediate Level maintenance for a more extensive leak test (paragraph 15-74).

15-73. ON/OFF VALVE INSPECTION. The ON/OFF Valve Inspection shall be performed during Place-In-Service and 90-Day Inspections and as determined by paragraph 15-70. To perform the ON/OFF Valve Inspection, proceed as follows:

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

1. Turn ON/OFF valve on. Ensure the pressure indicator pin is flush with or extends above the red/green notch.

2. Depress and release purge button. An audible hiss should be heard which should stop immediately once the button is released. If vented air does not stop immediately, depress purge button 3 or 4 more times. If vented air stops, proceed with test. If it does not stop or if no audible hiss is heard when purge button is depressed, forward HEED to I-Level maintenance for repair.

3. Turn ON/OFF valve off. Depress the purge button until air flow stops.

4. Allow SRU-36/P to sit for 15 minutes then depress purge button. Any audible hiss indicates a leaking ON/OFF valve. Forward HEED to I-Level maintenance for replacement of ON/OFF valve.

15-74. LEAK TEST, INTERMEDIATE LEVEL. Top-off HEED air cylinder, as required, and proceed as follows:

1. Ensure HEED is fully charged to 1800 psi.

CAUTION

Do not attempt to remove diaphragm cover retaining ring using a sharp tool. To do so could result in damage to diaphragm.

2. Remove the metal retaining ring with a small screwdriver by gently pushing one end inward and up and then moving the screwdriver in a circular motion around the top of the regulator (figure 15-18).

3. Place small screwdriver in one of the holes of the diaphragm cover, lift upwards and remove.

4. Remove the diaphragm.

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

5. Turn ON/OFF valve on.

6. Check HEED for leak using following methods.

a. Submerge entire HEED in water, check for leaks, then repeat Static Test (paragraph 15-72). If no leak is indicated, perform static leak test. If leak is indicated, proceed to step b.

b. Apply leak detection compound (MIL-L-25567) to the ON/OFF valve, pressure indicator, poppet housing, burst disc and the air cylinder/regulator interface.

7. If no leakage is evident, turn ON/OFF valve off.

8. If leaks are detected in the ON/OFF valve assembly, pressure indicator assembly, poppet housing or exhaust disc area, replace the applicable O-ring, and repeat step 6.

9. If the leak is in the burst disc assembly, remove the assembly and check to see if burst disc has blown. Replace disc as necessary.

10. If ruptured disc is not the obvious problem, replace entire burst disc assembly (paragraph 15-95).

11. If a leak from the poppet housing/lever assembly is detected, turn HEED upside down and lift the exhaust disc away from the regulator assembly. Using an appropriate round-tipped tool, reach through the 1/8-inch hole through which the poppet stem may be seen, and place the tool against the end of the poppet stem. Apply about 4 to 8 pounds of pressure on the end of the stem. This should ensure better contact between the poppet and poppet seat.

12. If an O-ring was replaced in any assembly in step 8, but the leak still exists, replace the applicable assembly.

13. If leakage persists, depress the purge button until the HEED is empty and replace the regulator assembly (paragraph 15-77).

14. Refill HEED air cylinder and repeat leak test.

15-75. COMPONENT REPAIR AND REPLACEMENT.

15-76. Repair of SRU-36/P HEED is performed at Organizational and Intermediate Level maintenance and shall be limited to replacement of components in accordance with table 15-4 and repair of minor cracks in the regulator housing. The pressure indicator assembly and mouthpiece assembly may be replaced at Organizational Level. All other repair and replacement shall be performed at Intermediate Level. All maintenance action shall be recorded on appropriate form in accordance with OPNAVINST 4790.2 Series.

15-77. REPLACEMENT OF REGULATOR ASSEMBLY. Removal, repair of minor cracks in the plastic housing, and reinstallation or replacement of the regulator or its component parts shall be performed at Intermediate Level maintenance.

15-78. Removal of Regulator Assembly.

WARNING

When regulator ON/OFF valve is on and HEED is under pressure, ensure pressure indicator pin is directed away from face and exposed body parts. Should internal structural failure of pressure indicator pin occur, ejected fragments of pin could cause serious personal injury.

Table 15-4. Troubleshooting SRU-36/P HEED

Trouble	Probable Cause	Remedy
On/Off Valve Assembly		
Leak between valve body (bonnet) and control knob.	Valve body (bonnet) inner O-ring failure.	Replace ON/OFF valve assembly. Torque to 50-60 in-lb.
Leak between valve bonnet and regulator housing.	Outer O-ring failure.	Clean valve bonnet using high pressure air and reinstall with new O-ring.
ON/OFF control knob difficult to turn.	Valve stem corrosion.	Replace ON/OFF valve assembly. Torque to 50-60 in-lb.
Pressure Indicator Assembly		
Leak between pressure indicator pin and pressure indicator body.	Inner O-ring failure.	Replace pressure indicator.
Leak between pressure indicator and regulator housing.	Outer O-ring failure.	Clean pressure indicator using high pressure air and reinstall with new O-ring.
Burst Disc Subassembly		
Leak from burst plug at high volume while filling.	Burst disc is blown.	Replace burst disc and burst disc washer.
Leak from burst plug at low volume.	Burst disc, plug, and nylon washer contaminated or burst plug is loose.	Clean burst disc port using high pressure air, replace burst disc and burst disc washer; clean and reinstall burst disc plug. Torque plug to 55-65 in-lb.
Poppet Housing/Lever Subassembly		
Leak from port hole on side of poppet housing.	Poppet and poppet housing contaminated or damaged.	Replace poppet assembly and poppet housing.
Leak from between poppet housing and regulator housing.	Outer O-ring failure.	Clean poppet housing using high pressure air and replace O-ring.
Free flow of air with diaphragm and cover in place.	Lever position is too high.	Adjust set screw counterclockwise to lower poppet lever.
Difficult inhalation effort.	Lever position is too low or filter is clogged.	Adjust set screw clockwise to raise poppet lever or clean main body and replace filter.
Free flow of air without diaphragm and cover in place.	Poppet not seating properly or poppet assembly damaged.	Apply light pressure (4-8 pounds) on end of poppet stem (located under exhaust disc) or replace poppet assembly.
Cylinder		
Leak between cylinder and regulator housing.	Cylinder exhaust disc O-ring failure.	Replace O-ring and reinstall cylinder on regulator, hand-tight.
Leak from under exhaust disc at 1/8 inch hole.	Poppet assembly damaged.	Replace poppet assembly.

1. Turn ON/OFF valve on and bleed all air from regulator and air cylinder by depressing purge button until air flow stops.

CAUTION

Do not use tools of any type to separate regulator from air cylinder; regulator is installed hand-tight.

NOTE

Have replacement regulator available for immediate replacement to guard against internal contamination of air cylinder.

2. Holding SRU-36/P inverted, unscrew cylinder from regulator, being careful not to lose exhaust disc, washer, or O-ring.

3. Inspect cylinder for internal corrosion. Cap the cylinder and place in secure location.

NOTE

Cylinder is non-repairable and shall be replaced if any corrosion or pitting is evident.

4. Remove exhaust disc, washer, and O-ring from stem of regulator.

5. Inspect regulator for cracks. If cracks exist, refer to paragraph 15-79.

15-79. Repair of Minor Cracks in Regulator. The only cracks in the regulator which are authorized to be repaired are minor cracks found in the regulator plastic housing below the pressure indicator assembly port and the ON/OFF valve assembly port. Cracks found in any other area of the regulator render it non-repairable. Repair minor cracks as follows:

Materials Required

Quantity	Description	Reference Number
1	Brush, Acid	—
As Required	Cyanoacrylate Adhesive	MIL-A-46050 NIIN 00-142-9193
1	Clamp	—

1. Remove regulator assembly from cylinder (paragraph 15-78).

2. Remove exhaust disc assembly and set aside in clean area.

3. On clean, dry regulator, apply adhesive to crack using acid brush.

4. Press crack in regulator together using clamp. Wipe away excess adhesive.

5. Allow adhesive to dry four hours, then reassemble regulator and reinstall on cylinder. Visually inspect corrected area to ensure rubber exhaust disc seats properly.

6. Refill SRU-36/P in accordance with paragraph 15-59.

15-80. Installation of Regulator Assembly.

Materials Required

Quantity	Description	Reference Number
As Required	Krytox 240AC, Type III, Lubricant	MIL-G-27617, NIIN 00-961-8995

1. Place regulator in an inverted position (stem upward) on work surface.

2. Install exhaust disc over shoulder of stem at base of regulator. Ensure disc is firmly seated around shoulder.

3. Install flat metal washer over stem and seat against exhaust disc.

4. Lightly lubricate exhaust disc O-ring with lubricant. Install over stem and seat against washer.

CAUTION

Ensure rubber disc remains seated around shoulder of stem. The inside diameter of rubber disc is larger than outside diameter of threaded portion of stem. Disc can become dislodged and cut by metal washer during assembly.

5. Position cylinder on stem. Hold regulator and carefully thread cylinder onto regulator hand tight.

6. Perform complete Place-In-Service Inspection in accordance with paragraph 15-36.

15-81. REPLACEMENT OF MOUTHPIECE ASSEMBLY. The mouthpiece assembly may be replaced at Organizational Level.

15-82. Removal of Mouthpiece Assembly. Remove mouthpiece as follows:

1. Cut cable tie using end cutter.

2. Grasp mouthpiece and twist and pull away from regulator.

15-83. Installation of Mouthpiece Assembly.

Materials Required

Quantity	Description	Reference Number
1	Cable Tie, Plastic	MS3367-1-0 NIIN 00-225-8721

1. Install mouthpiece by pushing and twisting mouthpiece onto regulator.

2. Adjust mouthpiece to proper position, and secure with cable tie.

3. Remove excess cable tie using end cutters.

15-84. REPLACEMENT OF ON/OFF VALVE ASSEMBLY (Figure 15-15). Removal and installation of ON/OFF valve shall be performed at Intermediate Level as follows:

15-85. Removal of ON/OFF Valve Assembly.

1. Turn ON/OFF valve fully counterclockwise, and depress purge button until all air has been depleted from cylinder.

2. Remove valve using 1/2-inch open-end wrench.

15-86. Installation of ON/OFF Valve Assembly.

Materials Required

Quantity	Description	Reference Number
1	O-ring	NAS1612-5 NIIN 00-086-2461
1	Torque Wrench	—

NOTE

When reinstalling/replacing ON/OFF valve, use new O-ring on valve.

1. Install ON/OFF valve and O-ring in non-filtered open port of regulator (figure 15-15), using 1/2-inch open-end torque wrench.

2. Torque to 50-60 in-lb.

3. Turn valve off, (clockwise).

4. Refill SRU-36/P in accordance with paragraph 15-59.

5. Perform Leak Test in accordance with paragraph 15-74.

15-87. REPLACEMENT OF PRESSURE INDICATOR ASSEMBLY (Figure 15-16). Removal and installation of the pressure indicator may be performed at Organizational Level.

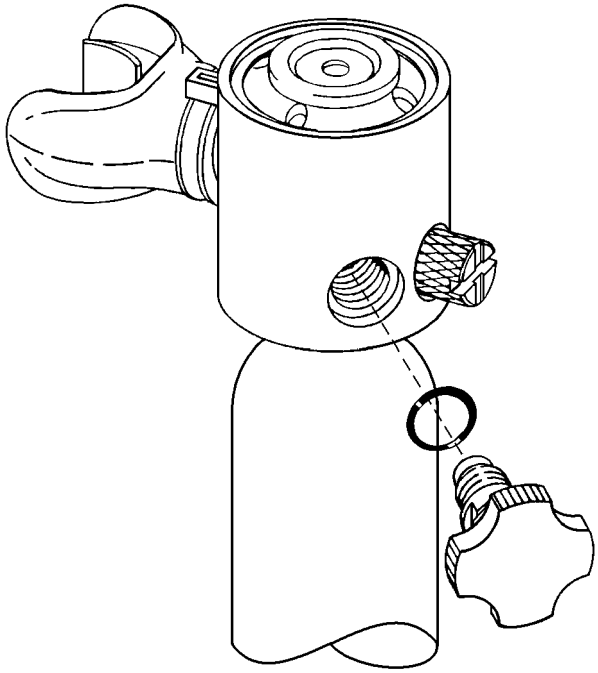

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Figure 15-15. ON/OFF Valve Assembly

15-88. Removal of Pressure Indicator Assembly.

1. Ensure ON/OFF valve is off. Depress purge button until air flow stops.

2. Turn pressure indicator counterclockwise, by hand, and remove indicator and O-ring from regulator.

15-89. Installation of Pressure Indicator Assembly.

1. Ensure filter and washer are installed in pressure indicator port. If filter is not installed, proceed to paragraph 15-92.

2. Install O-ring on pressure indicator and install pressure indicator in regulator port finger-tight.

3. Top-off HEED in accordance with paragraph 15-56.

4. Perform Static Leak Test in accordance with paragraph 15-72.

5. Make necessary entries on appropriate form in accordance with OPNAVINST 4790.2 Series.

15-90. REPLACEMENT OF FILTER (Figure 15-17).

Removal and installation of the filter shall be performed at Intermediate Level.

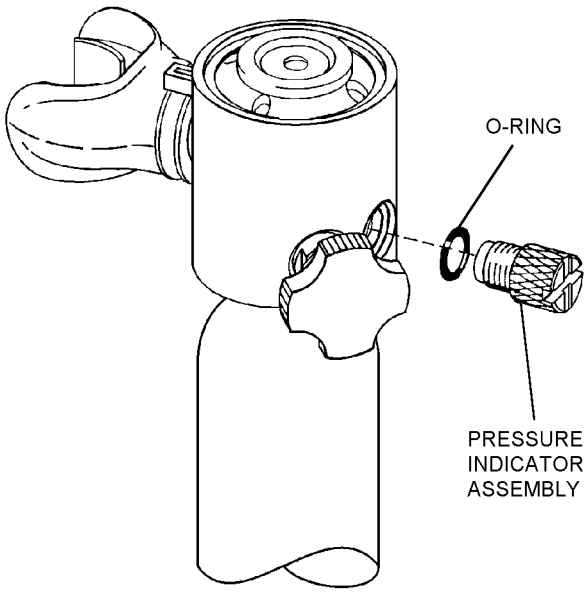

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Figure 15-16. Pressure Indicator Assembly

Materials Required

Quantity	Description	Reference Number
1	Awl, Wooden dowel, or 3/16 round-tip hand nut driver	—
1	O-ring	NAS1612-5 NIIN 00-086-2461

15-91. Removal of Filter.

1. Ensure ON/OFF valve is off. Depress purge button until air flow stops.

2. Turn pressure indicator counterclockwise, by hand, and remove indicator and O-ring from regulator.

CAUTION

Handle with care. Do not damage threads.

3. Position regulator with open pressure indicator port down and remove plastic washer by gently tapping on regulator. If washer is not dislodged, carefully remove it using rounded instrument such as an awl.

4. Remove filter by placing small screwdriver directly in center of filter and tapping lightly. Remove screwdriver and turn regulator so open port is facing down. Tap regulator to dislodge filter. If filter still does not come out, use small screwdriver to rotate filter until it breaks loose. Then tap regulator to dislodge filter and discard it.

15-92. Installation of Filter.

1. Install new filter in pressure indicator port using 3/16 rounded hand nut driver or comparable wood dowel to press it in place.

2. Install plastic washer over filter in same manner.

3. Install O-ring on pressure indicator and install pressure indicator in regulator port finger-tight.

4. Top-off HEED in accordance with paragraph 15-56.

5. Perform Static Leak Test in accordance with paragraph 15-72.

6. Make necessary entries on appropriate form in accordance with OPNAVINST 4790.2 Series.

15-93. DISASSEMBLY.

15-94. The following disassembly procedures may be used for the complete disassembly of the SRU-36/P HEED as authorized for Organizational and Intermediate Level maintenance. Disassembly at Organizational Level shall be limited to removal of the mouthpiece and pressure indicator assemblies. Intermediate Level performance shall encompass complete disassembly including all internal and external components in accordance with this paragraph. Maintenance shall be performed in a well lighted, clean work area. Record all maintenance actions on appropriate form in accordance with OPNAVINST 4790.2 Series.

15-95. REGULATOR ASSEMBLY. Complete disassembly of the regulator assembly shall be performed at Intermediate Level. Internal regulator components and exhaust disc assembly can be removed without removing the mouthpiece, ON/OFF valve or pressure indicator assemblies if required.

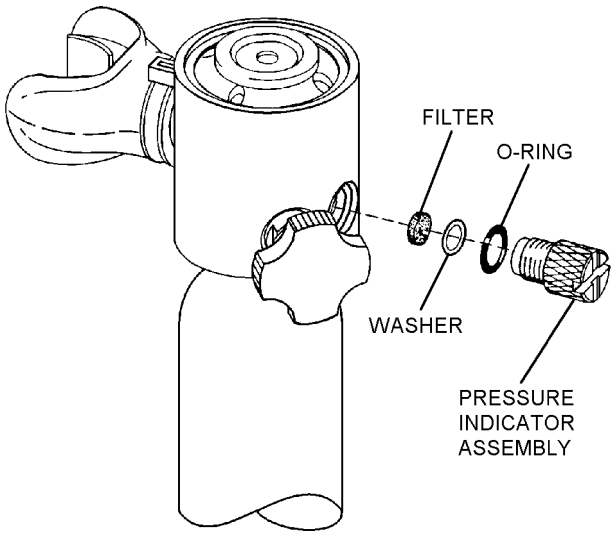


Figure 15-17. Filter Replacement

CAUTION

The SRU-36/P HEED shall be completely depressurized before attempting disassembly.

Do not force removal of any part. The part may be seized or frozen. If frozen, soak in a one-to-one solution of vinegar and water then proceed with disassembly.

1. Remove Mouthpiece Assembly. Refer to paragraph 15-82 for removal procedures.

2. Remove ON/OFF Valve Assembly. Refer to paragraph 15-85 for removal procedures.

3. Remove Pressure Indicator Assembly. Refer to paragraph 15-88 for removal procedures.

4. Remove Purge/Diaphragm Assembly as follows:

a. Using flat blade of small screwdriver and fingers, remove metal retaining ring (figure 15-18).

b. Carefully insert blade of small screwdriver into one of the holes in diaphragm cover. Lift and remove purge button/cover and diaphragm from regulator.

5. Remove Poppet Housing/Lever, Poppet, and Burst Disc Assemblies as follows:

a. Using screwdriver with blade tip same width and thickness as slot in burst disc plug, remove plug (turning counterclockwise) from burst disc port in center interior of regulator demand chamber (figure 15-19).

CAUTION

Do not scratch surface of nylon washer seat. If seat is marred, it could cause leak and result in replacement of regulator assembly.

b. Remove burst disc and nylon washer from regulator by turning regulator upside down. Burst disc and washer should fall out. If necessary, remove using dental pick, awl, or similar tool.

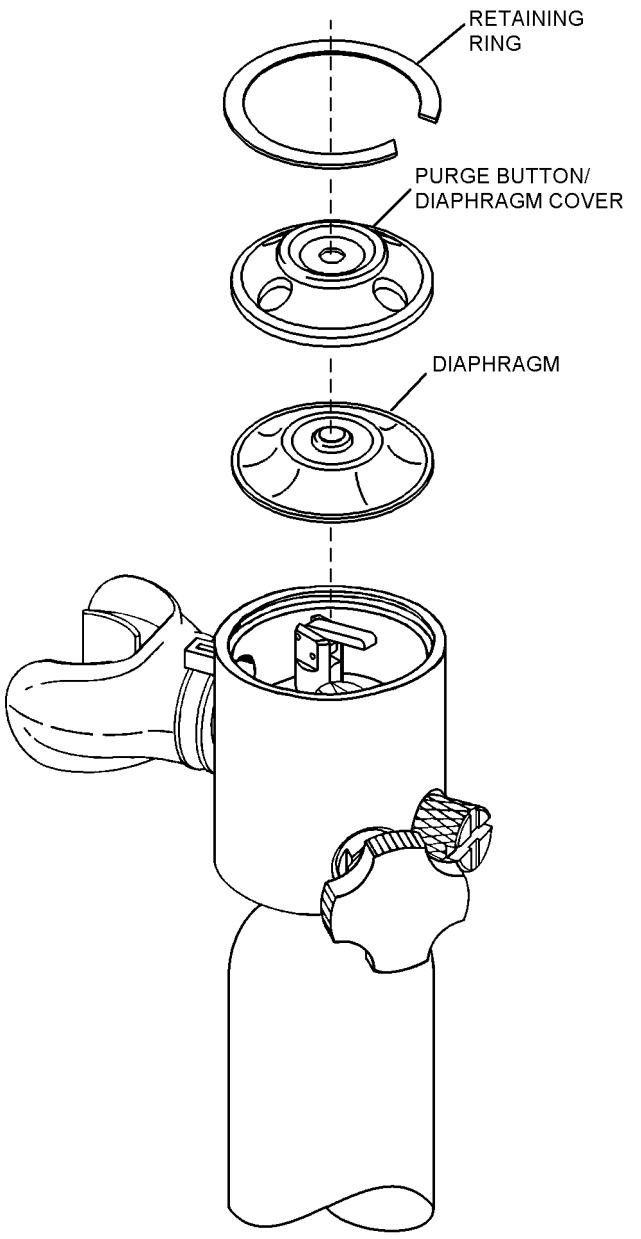


Figure 15-18. Purge/Diaphragm Assembly

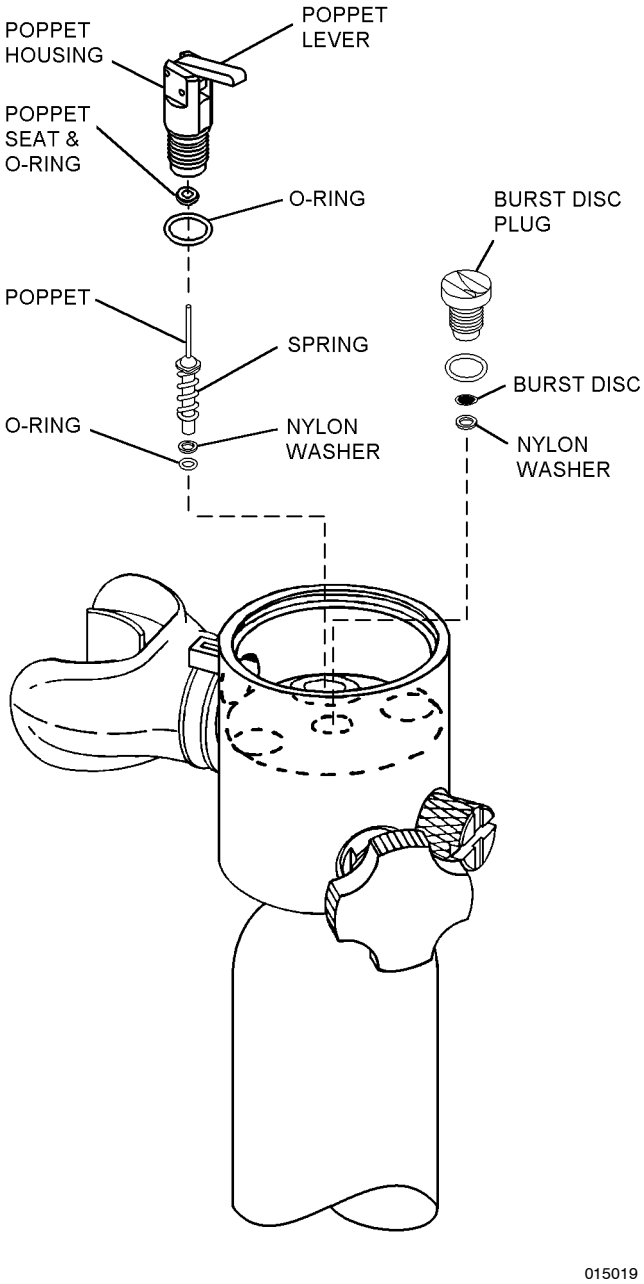


Figure 15-19. Poppet Housing, Poppet, and Burst Disc Assemblies

CAUTION

Do not use screwdriver or other tool to remove poppet housing. Use of tool may damage the assembly and interfere with free movement of poppet lever.

c. Using fingers, grasp poppet lever and unscrew and remove poppet housing. Then, remove poppet with attached spring, nylon washer, and O-ring.

6. Remove Regulator Assembly from Air Cylinder by inverting the regulator/cylinder assembly, to prevent dropping any of the exhaust disc assembly parts, and unscrewing cylinder from regulator assembly.

7. Remove Exhaust Disc Assembly by using your fingers to slide O-ring, metal washer, and exhaust disc off of regulator stem (figure 15-20).

NOTE

If it is necessary to use a tool to remove metal washer, be careful not to damage regulator threads or exhaust disc.

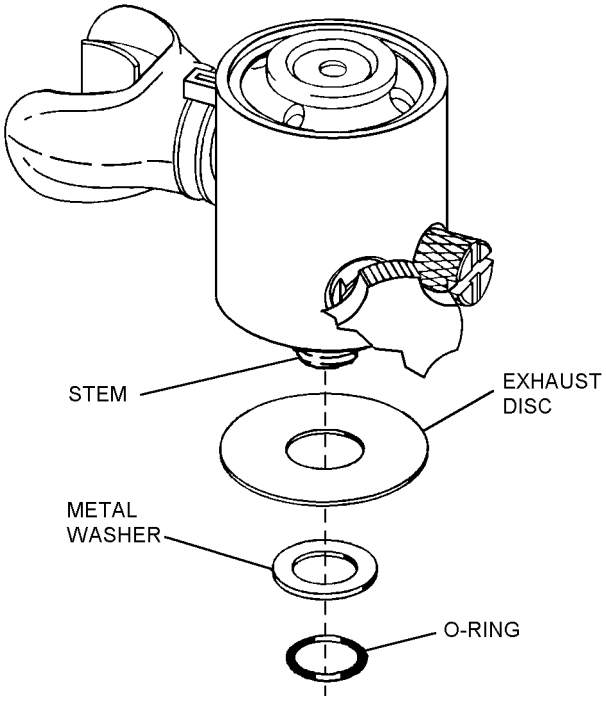


Figure 15-20. Exhaust Disc Assembly

15-96. INSPECTION OF DISASSEMBLED COMPONENTS. Inspection of disassembled parts shall be performed with the aid of magnifying glass to ensure detection of corrosion, nicks, cuts, burrs and other damage which could degrade effectiveness of HEED performance. Damaged components and parts shall be replaced. The poppet assembly shall be replaced if pin or seats are damaged. O-rings and the burst disc shall be replaced. Specific attention shall be given to following:

1. Regulator body for corrosion and damaged threads and sealing surfaces in all ports.

2. Plastic diaphragm cover for burrs, cracks, and foreign matter.

3. Purge button for secure attachment to diaphragm cover, wear, tears, and deterioration (paragraph 15-27).

4. Cover's metal retaining ring to ensure ring lays flat on flat surface. If sprung or bent, discard and replace with new retaining ring (P/N 411446, CAGE 49537 or P/N 04M-TC, CAGE 27045).

5. Burst disc plug for thread damage, cracks, and corrosion.

6. Poppet housing assembly for thread damage, nicks, corrosion, foreign matter, and free movement of poppet lever.

7. ON/OFF valve for corrosion, thread damage, and ease of operation.

8. Pressure indicator assembly for thread damage, corrosion, and foreign matter.

9. Mouthpiece assembly for deterioration, cracks, and splits.

10. Air cylinder for damage and corrosion. Interior with the aid of small flashlight or penlight for corrosion, rust, and general deterioration.

15-97. ASSEMBLY.

15-98. All parts found to be damaged or otherwise substandard during inspection of disassembled components shall be replaced prior to assembly. The SRU-36/P HEED is assembled as follows:

Materials Required

Quantity	Description	Reference Number
3	O-ring	NAS1612-5 NIIN 00-086-2461
1	O-ring	NAS1611-016 NIIN 00-953-1820
1	Washer, Nylon	09M (CAGE 49537) or 411066 (CAGE 27045)
1	Burst Disc	08M (CAGE 49537) or 411565 (CAGE 27045)
1	Pin, Seat, Poppet	14XM (CAGE 495327) or 411068 (CAGE 27045)
As Required	Krytox, 240 AC, Type III, Lubricant	MIL-G-27617 NIIN 00-961-8995

NOTE

Assembly procedures assume complete disassembly.

1. Install Mouthpiece Assembly as follows:

a. Install mouthpiece by pressing, twisting, and turning mouthpiece against regulator port fixture until it slips into position.

b. Adjust mouthpiece and secure with cable tie strap. Remove excess strap by cutting at cable tie lock using end-cutter.

2. Install ON/OFF Valve Assembly as follows:

a. Apply light coat of lubricant to valve stem threads and new O-ring (NAS1612-5).

b. Install O-ring on valve stem and install valve in non-filtered port of regulator.

c. Using 1/2-inch open-end wrench, torque valve to 50 to 60 in-lb.

d. Turn valve knob clockwise to off position.

3. Install Pressure Indicator Assembly as follows:

a. Apply light coat of lubricant to indicator housing threads and new O-ring (NAS1612-5).

b. Install new filter and nylon washer in pressure indicator port. Carefully press filter and washer into place using round-tipped 3/16-inch hand nut driver or wooden dowel.

NOTE

Install filter first, then place nylon washer over filter.

c. Install O-ring on pressure indicator and carefully install indicator in pressure indicator port, turning clockwise, finger-tight.

4. Install Poppet and Poppet Housing/Lever Assemblies, and Poppet Seat as follows:

CAUTION

Do not mar poppet seat surfaces during assembly procedures. Any damage could cause leakage.

a. Install new seat into base of poppet housing by carefully pressing seat into place using a wooden dowel or eraser-end of pencil.

b. Grasp poppet housing/lever assembly by the poppet lever and hold in upright position. Then grasp poppet pin assembly by the base of the pin and carefully insert pin straight up into center of housing into hole in center of seat.

NOTE

Holding pin in place, invert poppet housing to keep pin from falling out.

c. Install nylon washer on spring-end of poppet pin.

d. Invert regulator, then looking through hole in base of regulator port, seat assembled poppet housing/lever assembly in regulator, turn regulator upright, and screw housing into place, turning clockwise, finger-tight.

NOTE

When poppet housing/lever assembly is installed, the end of the poppet lever should be directly over open burst disc port and approximately 1/8 inch below the top surface of regulator body (see paragraph 15-101 for poppet lever height adjustment).

5. Install Burst Disc Assembly as follows:

a. Install new nylon washer in bottom of burst disc port.

b. Install new burst disc, then install burst disc plug and torque to 55 to 65 in-lb.

6. Install Exhaust Disc Assembly/Air Cylinder as follows:

a. Invert regulator assembly and install exhaust disc over threads of regulator stem.

CAUTION

Ensure metal washer does not pinch disc against base of threaded stem.

b. Install metal washer on stem over disc.

c. Apply light coat of lubricant to stem threads and O-ring (NAS1611-016) prior to installing O-ring on threaded stem.

d. Install air cylinder on regulator stem hand-tight.

e. Fill HEED in accordance with paragraph 15-59.

f. Leak test HEED in accordance with paragraph 15-74.

7. Install Diaphragm and Purge Button/Cover as follows:

NOTE

Diaphragm, purge button/cover installation shall be performed after completion of necessary adjustments in accordance with paragraph 15-101.

a. Carefully seat diaphragm on regulator. Metal plate on underside of diaphragm shall be barely in contact with poppet lever.

NOTE

Before installing new retaining ring ensure that the diaphragm assembly (purge button/cover assembly and diaphragm) is properly placed and seated in regulator housing.

b. Position purge button/cover over diaphragm and secure with retaining ring. Insure that retaining ring is fully seated into the groove machined around the full circumference of the regulator.

NOTE

Prior to installation, check to ensure retaining ring lays flat on a flat surface and is not distorted or bent in any way. Damaged retaining ring shall be replaced with P/N 411446 (CAGE 27045) or 04M-TC (CAGE 49537).

c. After installation of retaining ring, stand HEED upright on bench. Place palm of hand over purge/diaphragm assembly and exert downward pressure to enhance seating of retaining ring in locking groove. Reinspect for complete seating of retaining ring around the full circumference of the regulator.

NOTE

If retaining ring does not seat properly, disassemble and repeat assembly of diaphragm assembly with careful attention to proper seating of each part.

d. Top-off HEED and perform operational check in accordance with paragraph 15-103.

15-99. ADJUSTMENT.

15-100. Necessary adjustments must be made before final assembly of regulator.

15-101. POPPET LEVER HEIGHT. Check to ensure height of installed poppet lever is approximately 1/8 inch below top surface of regulator.

1. To adjust, raise poppet lever to vertical and insert 1/16-inch Allen wrench in socket of set screw in center of short lever located under poppet lever (figure 15-21).

2. Turn set screw clockwise to raise poppet lever and counterclockwise to lower lever.

3. Place diaphragm temporarily in position on regulator. Depress diaphragm lightly to feel resistance of poppet lever.

NOTE

If diaphragm cannot be seated because poppet lever is too high, adjust as required.

If diaphragm is properly seated, there should be immediate light resistance since poppet lever should be in slight contact with metallic plate on underside of diaphragm when properly adjusted.

4. To check free-travel of diaphragm, install purge button/cover and retaining ring over diaphragm. Turn ON/OFF valve on and depress purge button.

NOTE

When purge button is depressed, the diaphragm should move downward approximately 1/32 to 3/32 inch to depress poppet and activate air flow.

15-102. POPPET LEAK ADJUSTMENT. Perform Leak Test in accordance with paragraph 15-74. Small leak around poppet housing port in regulator may be corrected by making following adjustment:

1. Invert HEED and lift exhaust disc to expose 1/8-inch hole in bottom of regulator through which the end of poppet stem can be seen.

2. Using slender, round-tipped tool, insert tip of tool in hole and press against poppet stem using approximately 4 to 8 pounds of pressure. This should improve seal of poppet against poppet seat.

15-103. OPERATIONAL CHECK.

15-104. Upon completion of assembly and adjustment, perform an operational check to verify operation of completely assembled SRU-36/P HEED as follows:

1. Turn ON/OFF valve on.

2. Depress purge button, hold momentarily and release, to check air flow and reseating of poppet valve.

NOTE

There should be the sound of venting air (hissing) which should stop immediately when purge button is released.

3. Test inhalation effort for ease of breathing.

4. Turn ON/OFF valve off. Depress purge button, hold, and release. Turn ON/OFF valve on and listen for hissing sound of escaping air.

NOTE

Escaping air at this point would indicate leakage.

5. Top-off/refill air cylinder, if necessary.

6. Turn ON/OFF valve off and depress purge button until air flow stops.

7. Clean mouthpiece in accordance with paragraph 15-68.

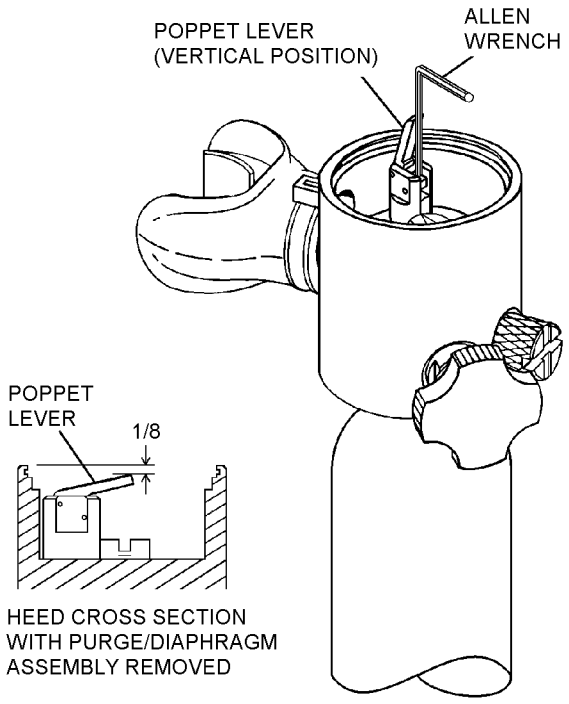


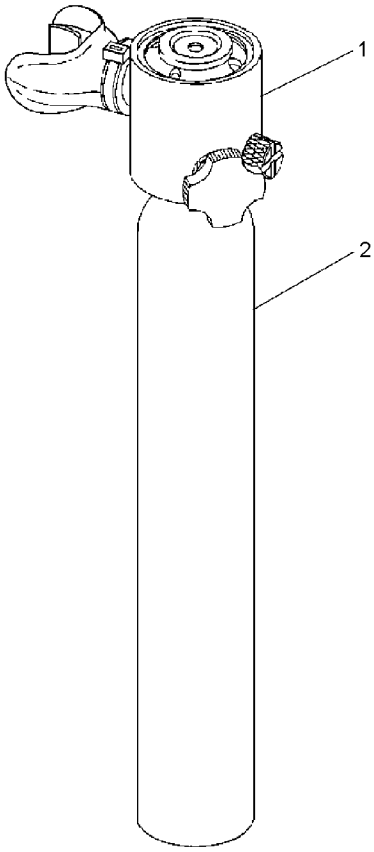
Figure 15-21. Poppet Lever Height Adjustment

Section 15-4. Illustrated Parts Breakdown

15-105. GENERAL.

15-106. This section lists and illustrates the assemblies and detail parts of the SRU-36/P Helicopter Emergency Egress Device.

15-107. The Illustrated Parts Breakdown should be used when requisitioning and identifying parts.



015022

Figure 15-22. SRU-36/P HEED

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable on Code
15-22	1586AS101-11	HEED, SRU-36/P, Type A (49537)	REF	A
	EBS/HMC-3	HEED, SRU-36/P, Type A (49537)	REF	A
	410361	HEED, SRU-36/P, Type A (27045)	REF	B
-1	1586AS102-11	. REGULATOR ASSEMBLY (49537)	1	A
	01M	. REGULATOR ASSEMBLY (49537)	1	A
	411032	. REGULATOR ASSEMBLY (27045) . . . . . (See Fig. 15-23 for breakdown)	1	B
-2	1586AS131-11	. CYLINDER, Air (Note 1)	1	

Notes: 1. Air cylinder may not be ordered separately. New HEED must be ordered when a cylinder is not serviceable.

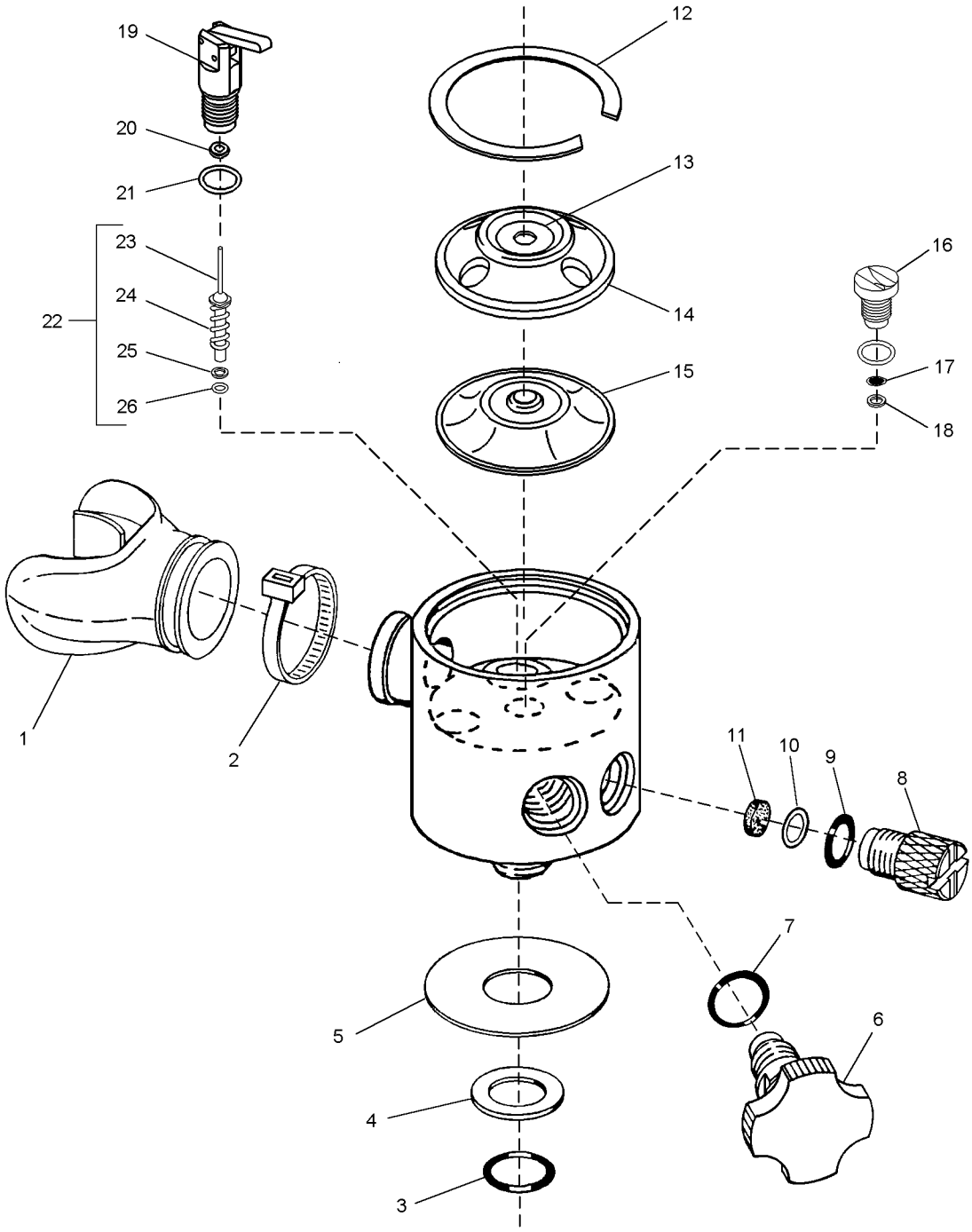


Figure 15-23. Regulator Assembly

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable on Code
15-23	1586AS102-11	REGULATOR ASSEMBLY (49537) (Note 1)	REF	A
	01M	REGULATOR ASSEMBLY (49537) (Note 1)	REF	A
	411032	REGULATOR ASSEMBLY (27045) (Note 1) (See Fig. 15-22 for NHA)	REF	B
-1	1586AS123-1	. MOUTHPIECE, Silicone	1	
-2	MS3367-1-0	. STRAP, Tiedown	1	
-3	NAS1611-016	. O-RING	1	
-4	26M	. WASHER, Metal (49537)	1	A
	411047	. WASHER, Metal (27045)	1	B
-5	25SM	. EXHAUST DISC, Rubber (49537)	1	A
	411046	. EXHAUST DISC, Rubber (27045)	1	B
-6	30	. VALVE ASSEMBLY, ON/OFF (49537)	1	A
	411049	. VALVE ASSEMBLY, ON/OFF (27045)	1	B
-7	NAS1612-5	. . O-RING	1	
-8	03SM	. PRESSURE INDICATOR (49537)	1	A
	411038	. PRESSURE INDICATOR (27045)	1	B
-9	NAS1612-5	. . O-RING	1	
-10	09M	. WASHER, Nylon (49537)	1	A
	411048	. WASHER, Nylon (27045)	1	B
-11	28M	. FILTER (49537)	1	A
	411066	. FILTER (27045)	1	B
-12	04M-TC	. RETAINING RING, Stainless Steel (49537) (Note 3)	1	A
	411446	. RETAINING RING, Stainless Steel (27045) (Note 3)	1	B
-13	05XM	. PURGE BUTTON (49537)	1	A
	411058	. PURGE BUTTON (27045)	1	B
-14	05M	. COVER, DIAPHRAGM (49537)	1	A
	411059	. COVER, DIAPHRAGM (27045)	1	B
-15	06M	. DIAPHRAGM (49537)	1	A
	411062	. DIAPHRAGM (27045)	1	B
-16	07M	. BURST DISC PLUG (49537)	1	A
	411064	. BURST DISC PLUG (27045)	1	B
-17	08M	. BURST DISC (49537)	1	A
	411565	. BURST DISC (27045)	1	B
-18	09M	. WASHER, Nylon (49537)	1	A
	411048	. WASHER, Nylon (27045)	1	B
-19	10M	. POPPET HOUSING/LEVER ASSEMBLY (49537)	1	A
	411034	. POPPET HOUSING/LEVER ASSEMBLY (27045) (Note 2)	1	B
-20	14XM	. . PIN SEAT, Poppet (49537)	1	A
	411068	. . PIN SEAT, Poppet (27045) (Note 2)	1	B
-21	NAS1612-5	. . O-RING (Note 2)	1	
-22	17M	. POPPET ASSEMBLY (49537)	1	A
	TBA	. POPPET ASSEMBLY (27045)	1	B
-23	16M	. . PIN, Dowel (49537)	1	A
	411067	. . PIN, Dowel (27045)	1	B
-24	18M	. . SPRING (49537)	1	A
	411044	. . SPRING (27045)	1	B
-25	19M	. . WASHER (49537)	1	A
	411045	. . WASHER (27045)	1	B
-26	20M	. . O-RING (49537)	1	A
	560-647-006	. . O-RING (27045)	1	B

Figure and Index Number	Part Number	Description 1 2 3 4 5 6 7	Units Per Assembly	Usable on Code
	Notes: 1. All replacement parts for the SRU-36/P HEED shall have the same CAGE code as the HEED under repair unless otherwise indicated by the USABLE ON CODE. 2. Poppet Housing/Lever Assembly (P/N 411034) does not include Poppet Pin Seat (P/N 411068) or O-ring (P/N NAS1612-5). These items must be ordered separately. 3. Stainless steel retaining ring may not be available through federal supply system at this time; it may be purchased from the following companies: Sabre Industries Inc. 120 W. Providencia Ave. Burbank, CA 91502 Commercial P/N 411446 (818) 843-7622 Submersible Systems Inc. 18112 Gothard Blvd. Huntington Beach, CA 92647 Commercial P/N 04M-TC (714) 842-6566			

NUMERICAL INDEX

Part Number	Figure and Index Number	SM&R Code
EBS/HMC-3	15-22	PAOOG
MS3367-1-0	15-23-2	PAOZZ
NAS1611-016	15-23-3	PAGZZ
NAS1612-5	15-23-7	PAGZZ
	15-23-9	PAOZZ
	15-23-21	PAGZZ
TBA	15-23-22	PAGGG
01M	15-22-1	PAOOG
	15-23	PAOOG
03SM	15-23-8	PAOOG
04M-TC	15-23-12	PAGZZ
05M	15-23-14	PAGZZ
05XM	15-23-13	PAGZZ
06M	15-23-15	PAGZZ
07M	15-23-16	PAGZZ
08M	15-23-17	PAGZZ
09M	15-23-10	PAOZZ
	15-23-18	PAGZZ
10M	15-23-19	PAGZZ
14XM	15-23-20	PAGZZ
1586AS101-11	15-22	PAOOG
1586AS102-11	15-22-1	PAOOG
	15-23	PAOOG
1586AS123-1	15-23-1	PAOZZ
1586AS131-11	15-22-2	XAGZZ
16M	15-23-23	PAGZZ
17M	15-23-22	PAGGG
18M	15-23-24	PAGZZ
19M	15-23-25	PAGZZ
20M	15-23-26	PAGZZ
25SM	15-23-5	PAGZZ
26M	15-23-4	PAGZZ
28M	15-23-11	PAOZZ
30	15-23-6	PAGZZ
410361	15-22	PAOOG
411032	15-22-1	PAOOG
	15-23	PAOOG
411034	15-23-19	PAGZZ
411038	15-23-8	PAOOG
411044	15-23-24	PAGZZ
411045	15-23-25	PAGZZ
411046	15-23-5	PAGZZ
411047	15-23-4	PAGZZ
411048	15-23-10	PAOZZ
	15-23-18	PAGZZ
411049	15-23-6	PAGZZ
411058	15-23-13	PAGZZ
411059	15-23-14	PAGZZ
411062	15-23-15	PAGZZ
411064	15-23-16	PAGZZ
411066	15-23-11	PAOZZ
411067	15-23-23	PAGZZ
411068	15-23-20	PAGZZ
411446	15-23-12	PAGZZ
411565	15-23-17	PAGZZ
560-647-006	15-23-26	PAGZZ

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